



# STIC Search Report

## EIC 2600

STIC Database Tracking Number: 132535

TO: Matthew J Sked  
Location: PK2-8C45  
Art Unit : 2655  
Monday, September 20, 2004

Case Serial Number: 09751836

From: Samir Patel  
Location: EIC 2600  
PK2-3C03  
Phone: 306-0254

Samir.patel@uspto.gov

### Search Notes

Dear Examiner,

Date:-09/20/04

Please find attached the search results for 09751836. I used the search strategy as we discussed. I searched the standard Dialog files, IEEE, Proquest and the internet.

If you would like a re-focus please let me know.

Thank You  
Samir Patel



## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Matthew Sked Examiner #: 80315 Date: 9/14/04  
 Art Unit: 2655 Phone Number 305-8663 Serial Number: 09/751,836  
 Location: Pka 3545 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Middleware layer between speech related applications and engines

Inventors (please provide full names): Phillip Schmid, Ralph Lipe, Robert Chambers

Edward Connell

Earliest Priority Filing Date: ~~12/20/00~~ 7/20/00

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Parent - 60/219,861

Application independent & engine independent

Speech recognition interfaces

## STAFF USE ONLY

## Type of Search

## Vendors and cost where applicable

Searcher: <u>Camela Reynolds</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: <u>306-0255</u>	AA Sequence (#) _____	Dialog <u>✓</u>
Searcher Location: <u>PK2 3003</u>	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: <u>9-20-04 3:25</u>	Bibliographic <u>✓</u>	Dr.Link _____
Date Completed: <u>9-20 3:00 p.m.</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>2:190</u>	Fulltext <u>✓</u>	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet <u>✓</u>
Online Time: <u>110</u>	Other _____	Other (specify) _____

File 2:INSPEC 1969-2004/Sep W2  
(c) 2004 Institution of Electrical Engineers  
File 6:NTIS 1964-2004/Sep W2  
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File 8:Ei Compendex(R) 1970-2004/Sep W2  
(c) 2004 Elsevier Eng. Info. Inc.  
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File 94:JICST-EPlus 1985-2004/Aug W4  
(c)2004 Japan Science and Tech Corp(JST)  
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(c) 2004 FIZ TECHNIK  
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(c) 2004 The HW Wilson Co.  
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File 233:Internet & Personal Comp. Abs. 1981-2003/Sep  
(c) 2003 EBSCO Pub.  
File 239:Mathsci 1940-2004/Nov  
(c) 2004 American Mathematical Society  
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec  
(c) 1998 Inst for Sci Info  
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(c) 2002 The Gale Group  
File 603:Newspaper Abstracts 1984-1988  
(c)2001 ProQuest Info&Learning  
File 483:Newspaper Abs Daily 1986-2004/Sep 17  
(c) 2004 ProQuest Info&Learning

Set	Items	Description
S1	12599	MIDDLEWARE??? OR MIDDLE()WARE??
S2	433	S1(3N)LAYER?
S3	14658	(SPEECH?? OR VOICE??)(3N)(APPLICATION?? OR SOFTWARE??)
S4	519	(SPEECH?? OR VOICE??)(3N)ENGINE??
S5	0	(SOFTWARE?? OR APPLICATION?? OR ENGIN??)(3N)(IDEPENDENT??)
S6	65724	(SOFTWARE?? OR APPLICATION?? OR ENGIN??)(3N)(INTERFACE?? OR GUI?? OR GRAPHICAL()USER()INTERFACE?)
S7	2473	(SPEECH?? OR VOICE??)(3N)(RECOGNI????? OR SYNTHES?????)(3N)-(INTERFACE?? OR GUI?? OR GRAPHICAL()USER()INTERFACE?)
S8	26951	API OR APPLICATION()PROGRAM????()INTERFACE?
S9	1	S2 AND (COUPL???? OR BETWEEN OR NEGOTIAT???? OR LINK??? OR MEDIAT????) AND APPLICATIONS AND ENGINE??
S10	5113	AU=(SCHMID P? OR SCHMID, P? OR LIPE R? OR LIPE, R? OR CHAMBERS R? OR CHAMBERS, R? OR CONNELL E? OR CONNELL, E?)
S11	2	S1 AND (S3 AND S4)
S12	0	S11 AND (S6 OR S7)
S13	12	S1 AND S7
S14	11	RD (unique items)
S15	2	S14 AND (INDEPENDENT?? OR GENERAL??)
S16	9	S14 NOT S15
S17	673	S1 AND S8
S18	0	S17 AND (S3 OR S4 OR S7)
S19	0	S10 AND S1
S20	1	S10 AND (S3 OR S4)

11/3,K/1 (Item 1 from file: 94)  
DIALOG(R) File 94:JICST-EPlus  
(c)2004 Japan Science and Tech Corp(JST). All rts. reserv.

04285000 JICST ACCESSION NUMBER: 99A0734992 FILE SEGMENT: JICST-E  
**Explorer for Speech Recognition. Middle ware for speech recognition and  
Information Consumer Electronics.**

HATAOKA NOBUO (1)  
(1) Hitachi, Ltd., Cent. Res. Lab.  
Erekutoronikusu, 1999, VOL.44,NO.8, PAGE.31-34, FIG.4, TBL.1, REF.4  
JOURNAL NUMBER: F0037AAL ISSN NO: 0421-3513 CODEN: ERKTA  
UNIVERSAL DECIMAL CLASSIFICATION: 681.3:165 681.3.069 681.327.2  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Commentary  
MEDIA TYPE: Printed Publication

**Explorer for Speech Recognition. Middle ware for speech recognition and  
Information Consumer Electronics.**

ABSTRACT: This paper introduces voice **middleware** with a **speech**  
recognition **engine** having a general-purpose microcomputer as a  
platform, and outlines the **application** development. This **speech**  
recognition system is a hidden Markov model (HMM) system of a phoneme  
piece. Noise control...  
...the additive noise as an on-vehicle noise control to obtain a favorable  
result. The **speech middleware** expands its **application** range to  
on-board devices such as car navigation, set top terminals, game  
machines, and...  
...DESCRIPTORS: **middleware** ;

11/3,K/2 (Item 2 from file: 94)  
DIALOG(R) File 94:JICST-EPlus  
(c)2004 Japan Science and Tech Corp(JST). All rts. reserv.

04284999 JICST ACCESSION NUMBER: 99A0734991 FILE SEGMENT: JICST-E  
**Explorer for Speech Recognition. Application to Car Navigation.**

MINOWA TOSHIMITSU (1)  
(1) Matsushita Commun. Ind. Co., Ltd.  
Erekutoronikusu, 1999, VOL.44,NO.8, PAGE.27-30, FIG.4, TBL.1, REF.6  
JOURNAL NUMBER: F0037AAL ISSN NO: 0421-3513 CODEN: ERKTA  
UNIVERSAL DECIMAL CLASSIFICATION: 681.3:165  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Commentary  
MEDIA TYPE: Printed Publication

**Explorer for Speech Recognition. Application to Car Navigation.**

...ABSTRACT: finding a candidate was adopted as the speech recognition.  
The candidate is searched by a **speech** recognition **engine** by **speech**  
recognition **middleware** . Among problems of the speech input are 1)  
the recognition rate and response, 2) the...  
...DESCRIPTORS: **middleware** ;

9/3,K/1 (Item 1 from file: 233)  
DIALOG(R)File 233:Internet & Personal Comp. Abs.  
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00662448 02WK05-113

**Take charge of custom storage options -- FalconStor's IPStor handles multiple functions in one package**

Garvey, Martin J

Information Week , May 13, 2002 , n888 p61, 1 Page(s)

ISSN: 8750-6874

Company Name: FalconStor Software

Product Name: IPStor 3

... 2000 IPStor virtualization software for any open-systems storage architecture. Explains that IPStor creates a **layer** of **middleware between** servers and storage systems that let customers change levels of capacity for **applications** as needed. Says that IPStor Version 3 gives customers new capabilities. Indicates that a Service...

... the features they want running at different times, and administrators can turn off the virtualization **engine** when they are replicating data from one source to another. (EPE)

15/3,K/1 (Item 1 from file: 2)  
DIALOG(R)File 2:INSPEC  
(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6793248 INSPEC Abstract Number: C2001-02-5260S-014  
**Title: Portable speech interpreter using speech recognition technologies for microprocessors**  
Author(s): Obuchi, Y.; Kitahara, Y.; Koizumi, A.; Matsuda, J.; Hataoka, N.  
Author Affiliation: Central Res. Lab., Hitachi Ltd., Kokubunji, Japan  
Journal: Transactions of the Institute of Electronics, Information and Communication Engineers D-II vol.J83D-II, no.11 p.2309-17  
Publisher: Inst. Electron. Inf. & Commun. Eng,  
Publication Date: Nov. 2000 Country of Publication: Japan  
CODEN: DTGDE7 ISSN: 0915-1923  
SICI: 0915-1923(200011)J83DII:11L.2309:PSIU;1-J  
Material Identity Number: M973-2000-012  
Language: Japanese  
Subfile: C  
Copyright 2000, IEE

Abstract: We have developed a portable interpreter system using the **speech recognition middleware** for embedded microprocessors. The user **interface** for the interpretation function includes sentence retrieval using keywords. We have developed two stage recognition of important words and **general** words, and a syllable correction function. It has realized the voice input of the large...

...Identifiers: **middleware** ;

15/3,K/2 (Item 1 from file: 8)  
DIALOG(R)File 8:Ei Compendex(R)  
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

06035857 E.I. No: EIP02156915216  
**Title: Human-voice interface**  
Author: Yoshida, Kazunaga; Hagane, Hiroshi; Hatazaki, Kaichiro; Iso, Ken-Ichi; Hattori, Hiroaki  
Source: NEC Research and Development v 43 n 1 January 2002. p 33-36  
Publication Year: 2002  
CODEN: NECRAU ISSN: 0547-051X  
Language: English

...Abstract: client-type speech interface and a server-type speech interface. The second is a speaker- **independent** large-vocabulary speech-recognition system and a speech-synthesis system, which are necessary to realize...

Descriptors: Continuous **speech recognition** ; **Interfaces** (computer); Internet; **Speech synthesis** ; Text processing; Mobile telecommunication systems; Servers; Electronic mail; Packet networks; Pattern matching; Flowcharting; **Middleware**

16/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6793235 INSPEC Abstract Number: B2001-02-6130E-015, C2001-02-5260S-008

**Title: Robust speech recognition for car environment noise**

Author(s): Kokubo, H.; Amano, A.; Hataoka, N.

Author Affiliation: Central Res. Lab., Hitachi Ltd., Kokubunji, Japan

Journal: Transactions of the Institute of Electronics, Information and Communication Engineers D-II vol.J83D-II, no.11 p.2190-7

Publisher: Inst. Electron. Inf. & Commun. Eng,

Publication Date: Nov. 2000 Country of Publication: Japan

CODEN: DTGDE7 ISSN: 0915-1923

SICI: 0915-1923(200011)J83DII:11L.2190:RSRE;1-Q

Material Identity Number: M973-2000-012

Language: Japanese

Subfile: B C

Copyright 2000, IEE

Abstract: We developed speech recognition **middleware** for the SuperH microprocessor. This **middleware** provides sophisticated user **interfaces** to car navigation systems. We study **speech recognition** for car environment noise. We propose a noise handling method, spectrum subtraction with noisy hidden...

...Identifiers: speech recognition **middleware** ;

16/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6704958 INSPEC Abstract Number: C2000-10-6180N-029

**Title: Natural language dialogue for personalized interaction**

Author(s): Zadrozny, W.; Budzikowska, M.; Chai, J.; Kambhatla, N.; Levesque, S.; Nicolov, N.

Author Affiliation: IBM Thomas J. Watson Res. Center, Hawthorne, NY, USA

Journal: Communications of the ACM vol.43, no.8 p.116-20

Publisher: ACM,

Publication Date: Aug. 2000 Country of Publication: USA

CODEN: CACMA2 ISSN: 0001-0782

SICI: 0001-0782(200008)43:8L.116:NLDP;1-O

Material Identity Number: C056-2000-008

U.S. Copyright Clearance Center Code: 0001-0782/2000/0800\$5.00

Language: English

Subfile: C

Copyright 2000, IEE

...Abstract: end systems must respond in accord, and one solution may be found somewhere in the **middle (ware)**. The pragmatic goal of natural language (NL) and multimodal **interfaces (speech recognition, keyboard entry, pointing, among others)** is to enable ease-of-use for users/customers in...

16/3,K/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

5726707 INSPEC Abstract Number: C9712-7445-019

**Title: Voice recognition and voice synthesis technologies for ITS**

Author(s): Ono, O.; Watanabe, T.; Mitome, Y.; Inagaki, K.  
Journal: NEC Technical Journal vol.50, no.7 p.138-42  
Publisher: NEC,  
Publication Date: July 1997 Country of Publication: Japan  
CODEN: NECGEZ ISSN: 0285-4139  
SICI: 0285-4139(199707)50:7L:138:VRVS;1-1  
Material Identity Number: H719-97011  
Language: Japanese  
Subfile: C  
Copyright 1997, IEE

...Abstract: developing voice recognition and voice synthesis technology which will provide a user-friendly, man-machine **interface**. NEC has developed a **voice recognition** system which is able to **recognize** an extensive vocabulary and continuous **voice recognition**, the "bundle research" method, to adapt to different acoustic environments. In the area of voice...

... This technology will be applied to the development of an interactive voice system platform or **middleware** for ITS applications, which will be an indispensable component of vehicles in the future.

...Identifiers: **middleware** ;

**16/3,K/4 (Item 1 from file: 8)**

DIALOG(R)File 8: Ei Compendex(R)  
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

06948954 E.I. No: EIP04308275658

**Title: It's good to talk**

Author: Anon  
Source: Electronic Product Design v 25 n 6 June 2004.  
Publication Year: 2004  
CODEN: EPDEDB ISSN: 0263-1474  
Language: English

Abstract: Toshiba is developing speech technology as part of Toshiba Research, providing **middleware** that can be embedded in the company's chips, for example the TX RISC processors...

...on quantum encryption algorithms which has developed both automatic speech recognition and test to speech **middleware**. Toshiba's approach to text to speech synthesis, is to code the speech and convert...

Descriptors: **Speech recognition** ; **Speech synthesis** ; Personal digital assistants; **Interfaces** (computer); **Speech processing**; Microphones; Communication systems; Computer software; Computer hardware

**16/3,K/5 (Item 2 from file: 8)**

DIALOG(R)File 8: Ei Compendex(R)  
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

06129951 E.I. No: EIP02377087141

**Title: VoiceXML: Enabling voice access to information**

Author: Kemble, Kimberlee  
Source: Communications Solutions v 7 n 1 January 2002. p 54-57  
Publication Year: 2002



ISSN: 1093-8176  
Language: English

...Abstract: standard that utilizes common programming methodologies to enable voice access to critical e-business applications. **Middleware** infrastructure products which utilize VoiceXML, allow customers to access vital information quickly, with distinguished ease...

...Descriptors: communication; Speech recognition; World Wide Web; Cellular telephone systems; Java programming language; HTML; Web browsers; **Graphical user interfaces** ; Servers; **Speech synthesis** ; Database systems; Computer keyboards

16/3,K/6 (Item 3 from file: 8)  
DIALOG(R)File 8:EI Compendex(R)  
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

06073629 E.I. No: EIP02266988543

**Title: Conversational natural language understanding interfacing city event information**

Author: Mast, Marion; Ross, Thomas; Schulz, Henrik; Harrikari, Heli; Demesticha, Vasiliki; Polymenakos, Lazaros; Vamvakoulas, Yannis; Stadermann, Jan

Corporate Source: IBM European Speech Research, D-69115 Heidelberg, Germany

Source: Data and Knowledge Engineering v 42 n 3 September 2002. p 343-360

Publication Year: 2002

CODEN: DKENEW ISSN: 0169-023X

Language: English

Descriptors: Natural language processing systems; **Speech recognition** ; Linguistics; **Middleware** ; **Interfaces (computer)** ; Information retrieval

16/3,K/7 (Item 1 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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03566057 JICST ACCESSION NUMBER: 98A0469620 FILE SEGMENT: JICST-E  
**ITS(Intelligent Transport Systems). Element Technologies of ITS. Voice Recognition and Voice Synthesis Technologies for ITS.**

ONO OSAMU (1); WATANABE TAKAO (2); MITOME YUKIO (2); INAGAKI KEIKO (2)

(1) NEC Corp.; (2) NEC Corp.

NEC Giho(NEC Technical Journal), 1997, VOL.50,NO.7, PAGE.138-142, FIG.4, REF.14

JOURNAL NUMBER: G0475BAB ISSN NO: 0285-4139

UNIVERSAL DECIMAL CLASSIFICATION: 681.3:165 656.11

LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Commentary

MEDIA TYPE: Printed Publication

...ABSTRACT: currently developing voice recognition and voice synthesis technology which will provide a userfriendly, man-machine **interface** . NEC has recently developed a **voice recognition** system which is able to recognize an extensive vocabulary and continuous voice recognition, the "bundle...

...This technology will be applied to the development of an interactive voice system platform or **middle - ware** for ITS applications, which will be an indispensable component of vehicles in the future. (author ...

16/3,K/8 (Item 1 from file: 144)  
DIALOG(R) File 144:Pascal  
(c) 2004 INIST/CNRS. All rts. reserv.

14627277 PASCAL No.: 00-0297854  
**Sophisticated speech processing middleware on microprocessor**  
**1999 IEEE 3rd workshop on multimedia signal processing : Copenhagen,**  
**13-15 September 1999**  
HATAOKA N; KOKUBO H; NUKAGA N; OBUCHI Y; AMANO A; KITAHARA Y  
LIU KJ Ray, ed; OSTERMANN Joern, ed; DEPRETTERE Ed, ed; KLEIJN W Bastiaan  
, ed; SORENSEN John Aasted, ed  
Central Research Laboratory, Hitachi Ltd., Kokubunji, Tokyo 185-8601,  
Japan  
IEEE Signal Processing Society, United States  
Workshop on multimedia signal processing, 3 (Copenhagen DNK) 1999-09-13  
1999 691-696  
Publisher: IEEE, Piscataway NJ  
Language: English

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**Sophisticated speech processing middleware on microprocessor**  
This paper describes Speech Processing **Middleware** which has been developed on RISC microprocessors aiming for embedded speech applications. This **middleware** consists of a speech recognition module and a speech synthesis module, and especially the speech recognition **middleware** has advantages of robustness for environmental noise and speaker differences. The speech **middleware** provides sophisticated user interfaces to multimedia systems using microprocessors as CPUs, such as car navigation...

English Descriptors: **Speech processing; Speech synthesis ; User interface ; Speech recognition ; Microprocessor; RISC processor; Robustness; Multimedia; Software tool; Digital processing; Adaptive algorithm; Implementation; Printed circuit board...**

16/3,K/9 (Item 1 from file: 233)  
DIALOG(R) File 233:Internet & Personal Comp. Abs.  
(c) 2003 EBSCO Pub. All rts. reserv.

00423913 96BY05-004  
**Make voice response sing -- A new generation of programming tools helps IVR programmers avoid the panic button**  
Linthicum, David S  
BYTE , May 1, 1996 , v21 n5 p53-56, 3 Page(s)  
ISSN: 0360-5280

... tools. Adds that IVR systems typically use distributed databases on servers linked by client/server **middleware** to help callers perform calculations online or talk directly to an application using enhanced speech...

Descriptors: **Voice Mail; Application Development; Audio Processing;**

Speech Recognition ; Database; User Interface

20/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

02529613 INSPEC Abstract Number: B85057319, C85045944

**Title:** Applications of automated speech technology to land-based army systems

**Author(s):** Chambers, R.M. ; deHaan, H.J.

**Author Affiliation:** US Army Res. Inst. for the Behavioral & Social Sci., Alexandria, VA, USA

**Journal:** Speech Technology vol.2, no.4 p.92-9

**Publication Date:** Feb.-March 1985 **Country of Publication:** USA

**CODEN:** SPETDB **ISSN:** 0744-1355

**Language:** English

**Subfile:** B C

**Title:** Applications of automated speech technology to land-based army systems

**Author(s):** Chambers, R.M. ; deHaan, H.J.

File 344:Chinese Patents Abs Aug 1985-2004/May  
(c) 2004 European Patent Office  
File 347:JAPIO Nov 1976-2004/May(Updated 040903)  
(c) 2004 JPO & JAPIO  
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200459  
(c) 2004 Thomson Derwent

Set	Items	Description
S1	436	MIDDLEWARE??? OR MIDDLE()WARE??
S2	36	S1(3N)LAYER?
S3	1374	(SPEECH?? OR VOICE??) (3N) (APPLICATION?? OR SOFTWARE??)
S4	377	(SPEECH?? OR VOICE??) (3N)ENGINE??
S5	0	(SOFTWARE?? OR APPLICATION?? OR ENGIN??) (3N) (IDEPENDENT??)
S6	7583	(SOFTWARE?? OR APPLICATION?? OR ENGIN??) (3N) (INTERFACE?? OR GUI?? OR GRAPHICAL()USER()INTERFACE?)
S7	687	(SPEECH?? OR VOICE??) (3N) (RECOGNI????? OR SYNTHES?????) (3N)- (INTERFACE?? OR GUI?? OR GRAPHICAL()USER()INTERFACE?)
S8	2890	API OR APPLICATION()PROGRAM????()INTERFACE?
S9	0	S2 AND (COUPL???? OR BETWEEN OR NEGOTIAT???? OR LINK??? OR MEDIAT????) AND APPLICATIONS AND ENGINE??
S10	360	AU=(SCHMID P? OR SCHMID, P? OR LIPE R? OR LIPE, R? OR CHAMBERS R? OR CHAMBERS, R? OR CONNELL E? OR CONNELL, E?)
S11	1	S10 AND (S1 AND S3)
S12	2	S10 AND S7
S13	2	S12 NOT S11
S14	4	S1 AND (S3 OR S4)
S15	1	S14 AND (S6 OR S7)
S16	3	S14 NOT S15
S17	0	S1 AND S7
S18	3	S1 AND (SPEECH?? OR VOICE??) (3N) (RECOGNI? OR SYNTHES?)
S19	1	S18 NOT (S14 OR S12 OR S11)

11/3,K/1 (Item 1 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
(c) 2004 Thomson Derwent. All rts. reserv.

014376787 \*\*Image available\*\*  
WPI Acc No: 2002-197490/200226  
XRPX Acc No: N02-150031

Middleware layer for mediation between speech related application  
and engine in computing system, has processing component configured to  
perform speech related services for application and engine  
Patent Assignee: MICROSOFT CORP (MICT ); CHAMBERS R L (CHAM-I); CONNELL E  
W (CONN-I); LIPE R (LIPE-I); SARKAR A (SARK-I); SCHMID P H (SCHM-I);  
CHAMBERS R (CHAM-I); CONNELL E (CONN-I); ELLERMAN E C (ELLE-I)  
Inventor: CHAMBERS R ; CONELL E; LIPE R ; SCHMID P H ; CHAMBERS R L ;  
CONNELL E W ; SARKAR A; CONNELL E ; ELLERMAN E C; ALLEVA F A; HWANG M;  
JU Y

Number of Countries: 027 Number of Patents: 008

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1175060	A2	20020123	EP 2001117564	A	20010720	200226 B
US 20020010809	A1	20020124	US 2000219861	P	20000720	200226
			US 2001871550	A	20010531	
US 20020032569	A1	20020314	US 2000219861	P	20000720	200226
			US 2001881518	A	20010614	
US 20020052743	A1	20020502	US 2000219861	P	20000720	200234
			US 2000751613	A	20001229	
US 20020069065	A1	20020606	US 2000219861	P	20000720	200241
			US 2000751836	A	20001229	
US 20020123881	A1	20020905	US 2000219861	P	20000720	200260
			US 2001778479	A	20010207	
US 20020143529	A1	20021003	US 2000219861	P	20000720	200267
			US 2001759474	A	20010112	
US 6694296	B1	20040217	US 2000219861	P	20000720	200413
			US 2000706375	A	20001103	

Priority Applications (No Type Date): US 2000751836 A 20001229; US  
2000219861 P 20000720; US 2001871550 A 20010531; US 2001881518 A 20010614  
; US 2000751613 A 20001229; US 2001778479 A 20010207; US 2001759474 A  
20010112; US 2000706375 A 20001103

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1175060	A2	E	30	H04L-029/06	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
US 20020010809	A1			G06F-009/44	Provisional application US 2000219861
US 20020032569	A1			G10L-021/00	Provisional application US 2000219861
US 20020052743	A1			G10L-015/00	Provisional application US 2000219861
US 20020069065	A1			G10L-021/00	Provisional application US 2000219861
US 20020123881	A1			G06F-017/28	Provisional application US 2000219861
US 20020143529	A1			G10L-015/00	Provisional application US 2000219861
US 6694296	B1			G10L-015/28	Provisional application US 2000219861

Middleware layer for mediation between speech related application and engine in computing system, has processing component configured to perform speech related services for application and engine  
Inventor: CHAMBERS R ...

... LIPE R ...

... SCHMID P H ...

... CHAMBERS R L ...

... CONNELL E W ...

... CONNELL E

Abstract (Basic):

... The speech middleware component has application independent interface connected to the application, and an engine independent interface connected to the engine...

... a) Multi-process speech recognition middleware layer...

...b) Multi-voice speech synthesis middleware layer...

13/3,K/1 (Item 1 from file: 350)

DIALOG(R)File 350:Derwent WPIX

(c) 2004 Thomson Derwent. All rts. reserv.

015912563 \*\*Image available\*\*

WPI Acc No: 2004-070403/200407

XRPX Acc No: N04-056697

Speech and handwriting integrating user interface for digital computing environment, has speech input and stylus input portion to allow user to input data into computer by speaking words aloud and by writing with stylus

Patent Assignee: MICROSOFT CORP (MICT )

Inventor: CHAMBERS R L ; GARSIDE A J; GEIDL E; IWEMA M; KEELY L B; LUI C E ; SCHMID P H ; SOIN R; VONG W H; WILEY K; ZIELINSKI T A

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030233237	A1	20031218	US 2002174491	A	20020617	200407 B

Priority Applications (No Type Date): US 2002174491 A 20020617

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030233237	A1		23	G10L-021/00	

Inventor: CHAMBERS R L ...

... SCHMID P H

Abstract (Basic):

... to input data into the computer by writing with a stylus. A dictation function in speech input portion instructs the interface to recognize words spoken aloud by the user as text. A text function instructs the interface to...

13/3,K/2 (Item 2 from file: 350)

DIALOG(R)File 350:Derwent WPIX

(c) 2004 Thomson Derwent. All rts. reserv.

014853162 \*\*Image available\*\*

WPI Acc No: 2002-673868/200272

XRPX Acc No: N02-532794

Computer-readable medium for speech recognition system, stores instructions for selecting recognition value in new phrase that does not introduce semantic ambiguity into grammar structure

Patent Assignee: GARSIDE A (GARS-I); SCHMID P H (SCHM-I)

Inventor: GARSIDE A; SCHMID P H

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20020099535	A1	20020725	US 2001767093	A	20010122	200272 B

Priority Applications (No Type Date): US 2001767093 A 20010122

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020099535	A1		15	G06F-017/27	

...Inventor: SCHMID P H



Abstract (Basic):

... An INDEPENDENT CLAIM is included for **speech recognition interface** .

15/3,K/1 (Item 1 from file: 350)  
DIALOG(R) File 350:Derwent WPIX  
(c) 2004 Thomson Derwent. All rts. reserv.

014376787 \*\*Image available\*\*  
WPI Acc No: 2002-197490/200226  
XRPX Acc No: N02-150031

Middleware layer for mediation between speech related application  
and engine in computing system, has processing component configured to  
perform speech related services for application and engine  
Patent Assignee: MICROSOFT CORP (MICT ); CHAMBERS R L (CHAM-I); CONNELL E  
W (CONN-I); LIPE R (LIPE-I); SARKAR A (SARK-I); SCHMID P H (SCHM-I);  
CHAMBERS R (CHAM-I); CONNELL E (CONN-I); ELLERMAN E C (ELLE-I)  
Inventor: CHAMBERS R; CONELL E; LIPE R; SCHMID P H; CHAMBERS R L; CONNELL E  
W; SARKAR A; CONNELL E; ELLERMAN E C; ALLEVA F A; HWANG M; JU Y  
Number of Countries: 027 Number of Patents: 008  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1175060	A2	20020123	EP 2001117564	A	20010720	200226 B
US 20020010809	A1	20020124	US 2000219861	P	20000720	200226
			US 2001871550	A	20010531	
US 20020032569	A1	20020314	US 2000219861	P	20000720	200226
			US 2001881518	A	20010614	
US 20020052743	A1	20020502	US 2000219861	P	20000720	200234
			US 2000751613	A	20001229	
US 20020069065	A1	20020606	US 2000219861	P	20000720	200241
			US 2000751836	A	20001229	
US 20020123881	A1	20020905	US 2000219861	P	20000720	200260
			US 2001778479	A	20010207	
US 20020143529	A1	20021003	US 2000219861	P	20000720	200267
			US 2001759474	A	20010112	
US 6694296	B1	20040217	US 2000219861	P	20000720	200413
			US 2000706375	A	20001103	

Priority Applications (No Type Date): US 2000751836 A 20001229; US  
2000219861 P 20000720; US 2001871550 A 20010531; US 2001881518 A 20010614  
; US 2000751613 A 20001229; US 2001778479 A 20010207; US 2001759474 A  
20010112; US 2000706375 A 20001103

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1175060	A2	E	30	H04L-029/06	
				Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR	
US 20020010809	A1			G06F-009/44	Provisional application US 2000219861
US 20020032569	A1			G10L-021/00	Provisional application US 2000219861
US 20020052743	A1			G10L-015/00	Provisional application US 2000219861
US 20020069065	A1			G10L-021/00	Provisional application US 2000219861
US 20020123881	A1			G06F-017/28	Provisional application US 2000219861
US 20020143529	A1			G10L-015/00	Provisional application US 2000219861
US 6694296	B1			G10L-015/28	Provisional application US 2000219861

Middleware layer for mediation between speech related application  
and engine in computing system, has processing component configured to

perform speech related services for application and engine

Abstract (Basic):

... The **speech** middleware component has **application** independent **interface** connected to the **application** , and an **engine** independent **interface** connected to the **engine** . The processing component is configured to perform speech related services for the application and the...

... a) Multi-process speech recognition **middleware** layer...

...b) Multi-voice speech synthesis **middleware** layer...

...For mediation between application and **engines** such as **speech** recognizer and speech synthesizer in a computing system, PC, server computer, hand-held or laptop...

?

16/3,K/1 (Item 1 from file: 347)  
DIALOG(R)File 347:JAPIO  
(c) 2004 JPO & JAPIO. All rts. reserv.

07485611 \*\*Image available\*\*  
COORDINATION PROGRAM AND METHOD FOR CALL CONTROL VOICE CONTROL SERVICE, AND  
CTI SERVER, AND CTI SYSTEM

PUB. NO.: 2002-354129 [JP 2002354129 A]  
PUBLISHED: December 06, 2002 (20021206)  
INVENTOR(s): ONO TAKAYA  
APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD  
APPL. NO.: 2001-160730 [JP 2001160730]  
FILED: May 29, 2001 (20010529)

ABSTRACT

...and voice control services.

SOLUTION: A PC application 31 uses one call control voice control  
**middleware** 32 to utilize a call control service and a voice control  
service provided by the CTI system 33. When the PC **application** 31 makes a  
**voice** message reproduction request, the call control voice control  
**middleware** 32 receives this request, allows a voice service terminal 32  
to make a call to...

16/3,K/2 (Item 1 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
(c) 2004 Thomson Derwent. All rts. reserv.

016280764 \*\*Image available\*\*  
WPI Acc No: 2004-438659/200441  
XRPX Acc No: N04-346979

Information providing method for wireless and wireline devices e.g.  
voice-only phone, involves receiving information request from device and  
detecting device type through single wireless portal middleware

Patent Assignee: NORTEL NETWORKS LTD (NELE )  
Inventor: BASU K K; JIANG H; LEE H C; YU C  
Number of Countries: 001 Number of Patents: 001  
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6741853	B1	20040525	US 2000711223	A	20001109	200441 B

Priority Applications (No Type Date): US 2000711223 A 20001109

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 6741853	B1	34	H04M-003/493	

... phone, involves receiving information request from device and  
detecting device type through single wireless portal middleware

Abstract (Basic):

... multiple wireless and wireline devices of varying configurations  
and types through a single wireless portal **middleware** (WPM) (210) and  
detecting a device type through the WPM. The requested information is  
retrieved...

... Used for providing information to wireless and wireline devices  
e.g. **voice** -only phone, wireless **application** protocol (WAP) device,  
PDA and a laptop computer...

16/3,K/3 (Item 2 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
(c) 2004 Thomson Derwent. All rts. reserv.

016278776 \*\*Image available\*\*  
WPI Acc No: 2004-436671/200441  
XRPX Acc No: N04-345463

**Speech recognition method e.g. for mobile telephone, involves  
categorizing correctly and erroneously recognized forms of vowel  
utterances from input speech and replacing erroneously recognized  
utterance**

Patent Assignee: TSUKADA T (TSUK-I)  
Number of Countries: 001 Number of Patents: 001  
Patent Family:  
Patent No Kind Date Applicat No Kind Date Week  
JP 2004170466 A 20040617 JP 2002332919 A 20021115 200441 B

Priority Applications (No Type Date): JP 2002332919 A 20021115

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2004170466	A		19	G10L-015/24	

Abstract (Basic):

... electrical appliances such as car navigation system and also in  
e-mail system, oral statement **software** , internet **applications** ,  
**speech** recognition **middleware software** , word processing software,  
television receiver, air conditioner, used by physically, visually  
disabled persons, elderly people...

19/3,K/1 (Item 1 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
(c) 2004 Thomson Derwent. All rts. reserv.

015147032 \*\*Image available\*\*  
WPI Acc No: 2003-207559/200320

**Automatic telephone exchange and web mailing system using speech  
recognition and method thereof**

Patent Assignee: WELL COMM NET CO LTD (WELL-N)

Inventor: SEO G H

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
KR 2002072359	A	20020914	KR 200112202	A	20010309	200320 B

Priority Applications (No Type Date): KR 200112202 A 20010309

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
KR 2002072359	A	1	H04L-012/54	

**Automatic telephone exchange and web mailing system using speech  
recognition and method thereof**

Abstract (Basic):

... An automatic telephone exchange and web mailing system using  
**speech recognition** and a method thereof are provided to **recognize**  
a **voice** of a caller, automatically exchange a telephone conversation,  
and transmit a voice or a character...  
... judges whether inputted exchange information is a voice(S31). If  
inputted exchange information is the **voice**, the call controller  
**recognizes** the **voice** using an ASR(Automatic Speech Response)  
**middleware** and converts exchange information into data with a suitable  
other type. An IVR(Interactive Voice...  
?

File 348:EUROPEAN PATENTS 1978-2004/Sep W02

(c) 2004 European Patent Office

File 349:PCT FULLTEXT 1979-2002/UB=20040916,UT=20040909

(c) 2004 WIPO/Univentio

Set	Items	Description
S1	1770	MIDDLEWARE??? OR MIDDLE()WARE??
S2	278	S1(3N)LAYER?
S3	6527	(SPEECH?? OR VOICE??)(3N)(APPLICATION?? OR SOFTWARE??)
S4	756	(SPEECH?? OR VOICE??)(3N)ENGINE??
S5	1	(SOFTWARE?? OR APPLICATION?? OR ENGIN??)(3N)(DEPENDENT??)
S6	33002	(SOFTWARE?? OR APPLICATION?? OR ENGIN??)(3N)(INTERFACE?? OR GUI?? OR GRAPHICAL()USER()INTERFACE?)
S7	1678	(SPEECH?? OR VOICE??)(3N)(RECOGNI????? OR SYNTHES?????)(3N)- (INTERFACE?? OR GUI?? OR GRAPHICAL()USER()INTERFACE?)
S8	17395	API OR APPLICATION()PROGRAM????()INTERFACE?
S9	120	S2 AND (COUPL???? OR BETWEEN OR NEGOTIAT???? OR LINK??? OR MEDIAT????) AND APPLICATIONS AND ENGINE??
S10	186	AU=(SCHMID P? OR SCHMID, P? OR LIPE R? OR LIPE, R? OR CHAM- BERS R? OR CHAMBERS, R? OR CONNELL E? OR CONNELL, E?)
S11	1	S10 AND S1
S12	1	S11(S)(S3 OR S4)
S13	30	S1(S)(S3 OR S4)
S14	10	S13 AND S7
S15	20	S13 NOT S14
S16	10	S15 AND ((SPEECH?? OR VOICE??)(3N)(RECOGNI? OR SYNTHES?))
S17	58	S1 AND S7
S18	48	S17 NOT S13
S19	4	S18 AND IC=G10L?

12/3,K/1 (Item 1 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
(c) 2004 European Patent Office. All rts. reserv.

01383234

Middleware **layer between speech related applications and engines**  
**Middleware-schicht zwischen Sprachanwendungen und Sprachtreiber**  
**Couche intergiciel entre applications et moteurs vocales**

PATENT ASSIGNEE:

MICROSOFT CORPORATION, (749861), One Microsoft Way, Redmond, Washington  
98052-6399, (US), (Applicant designated States: all)

INVENTOR:

Schmid, Philipp Heinz, 2436 42nd Avenue E, 431, Seattle, WA 98112, (US)  
Lipe, Ralph, 1442 92nd Avenue NE, Clyde Hill, WA 98004, (US)  
Chambers, Robert, 26518 SE 19th Court, Issaquah, WA 98029, (US)  
Conell, Edward, 13415 157th Avenue NE, Redmond, WA 98052, (US)

LEGAL REPRESENTATIVE:

Grunecker, Kinkeldey, Stockmair & Schwanhausser Anwaltssozietat (100721)  
, Maximilianstrasse 58, 80538 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 1175060 A2 020123 (Basic)  
EP 1175060 A3 040331

APPLICATION (CC, No, Date): EP 2001117564 010720;

PRIORITY (CC, No, Date): US 751836 001229; US 219861 P 000720

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: H04L-029/06

ABSTRACT WORD COUNT: 49

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200204	2207
SPEC A	(English)	200204	9090
Total word count - document A			11297
Total word count - document B			0
Total word count - documents A + B			11297

Middleware **layer between speech related applications and engines**

...SPECIFICATION In particular, the present invention relates to a  
middleware layer which resides between applications and **engines** (i.e.,  
**speech** recognizers and speech synthesizers) and provides services, on an  
application-independent and engine-independent basis, for both  
**applications and engines** .

**Speech synthesis engines** typically include a decoder which receives  
textual information and converts it to audio information which...

...The present invention provides an application-independent and  
engine-independent middleware layer between applications and **engines** .  
The **middleware** provides **speech** -related services to both applications  
and engines, thereby making it far easier for application vendors...

...to consumers.

In one embodiment, the middleware layer provides a rich set of services

*applicant*



14/3,K/1 (Item 1 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
(c) 2004 European Patent Office. All rts. reserv.

01383234

Middleware **layer between speech related** applications and engines  
Middleware-schicht zwischen Sprachanwendungen und Sprachtreiber  
Couche intergiciel entre applications et moteurs vocales

PATENT ASSIGNEE:

MICROSOFT CORPORATION, (749861), One Microsoft Way, Redmond, Washington  
98052-6399, (US), (Applicant designated States: all)

INVENTOR:

Schmid, Philipp Heinz, 2436 42nd Avenue E, 431, Seattle, WA 98112, (US)  
Lipe, Ralph, 1442 92nd Avenue NE, Clyde Hill, WA 98004, (US)  
Chambers, Robert, 26518 SE 19th Court, Issaquah, WA 98029, (US)  
Conell, Edward, 13415 157th Avenue NE, Redmond, WA 98052, (US)

LEGAL REPRESENTATIVE:

Grunecker, Kinkeldey, Stockmair & Schwanhausser Anwaltssozietat (100721)  
, Maximilianstrasse 58, 80538 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 1175060 A2 020123 (Basic)  
EP 1175060 A3 040331

APPLICATION (CC, No, Date): EP 2001117564 010720;

PRIORITY (CC, No, Date): US 751836 001229; US 219861 P 000720

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: H04L-029/06

ABSTRACT WORD COUNT: 49

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200204	2207
SPEC A	(English)	200204	9090
Total word count - document A			11297
Total word count - document B			0
Total word count - documents A + B			11297

Middleware **layer between speech related** applications and engines

...SPECIFICATION The present invention provides an application-independent  
and engine-independent middleware layer between applications and **engines**  
. The **middleware** provides **speech** -related services to both  
applications and engines, thereby making it far easier for application  
vendors...

...to consumers.

In one embodiment, the middleware layer provides a rich set of services  
between **speech** synthesis **applications** and synthesis engines. Such  
services include parsing of input data into text fragments, format  
negotiation...

...application, multivoice mixing processes.

In yet another embodiment, the invention includes a middleware  
component between **speech** recognition applications and **speech**  
recognition **engines** . In such an embodiment, the **middleware** layer  
illustratively generates a set of COM objects which configures the  
**speech** recognition **engine** , handles event notification and enables

interface configured...

...engine.

11. The middleware layer of claim 1 wherein the engine comprises a text-to- **speech** (TTS) **engine** and wherein the processing component comprises:

a first object having an application interface and an...

...by the engine to begin synthesis.

16. The middleware layer of claim 1 wherein the **engine** comprises a **speech** recognition (SR) **engine** and wherein the processing component comprises:

a first object having an application interface and an engine interface.

17. The middleware layer of claim 16 wherein the application **interface** exposes a method configured to receive recognition attributes from the application and instantiate a specific **speech** **recognition engine** based on the engine attributes received.

18. The middleware layer of claim 16 wherein the...engine interface on the site object is configured to receive result information from the SR **engine** indicative of recognized **speech** .

38. The middleware layer of claim 36 wherein the engine interface on the site object...

...application.

40. A multi-process speech recognition middleware layer configured to facilitate communication between a **speech** recognition (SR) **engine** and one or more applications, the **middleware** layer comprising:

a first process including:

a first context object having an application interface to enable application control of a first plurality of attributes of the **speech** **recognition** and an engine **interface** ; and

a first grammar object having an application interface and an engine interface and storing...

...an application interface to enable application control of a first plurality of attributes of the **speech** **recognition** and an engine **interface** ; and

a second grammar object having an application interface and an engine interface and storing...

...configured to facilitate communication between one or more applications and a plurality of text-to- **speech** (TTS) **engines** , comprising:

at least a first voice object having an application interface configured to receive TTS...

14/3,K/2 (Item 1 from file: 349)

DIALOG(R) File 349:PCT FULLTEXT

(c) 2004 WIPO/Univentio. All rts. reserv.

01028601 \*\*Image available\*\*

INTERACTIVE COMPUTERIZED PERFORMANCE SUPPORT SYSTEM AND METHOD

SYSTEME ET PROCEDE INFORMATIQUE INTERACTIF DE SOUTIEN A LA PERFORMANCE

Patent Applicant/Assignee:

MOBILE PRODUCTIVITY INC, 1280 Bison Avenue, B9-499, Newport Beach, CA

92660, US, US (Residence), US (Nationality), (For all designated states except: US)

Patent Applicant/Inventor:

ROGERS Kevin B, 1280 Bison Avenue, B9-499, Newport Beach, CA 92660, US,  
US (Residence), US (Nationality), (Designated only for: US)  
Legal Representative:  
HUNT Dale C (agent), Knobbe, Martens, Olson & Bear, LLP, 2040 Main  
Street, 14th Floor, Irvine, CA 92614, US,  
Patent and Priority Information (Country, Number, Date):  
Patent: WO 200358581 A1 20030717 (WO 0358581)  
Application: WO 2002US41842 20021230 (PCT/WO US0241842)  
Priority Application: US 2001346436 20011228  
Designated States:  
(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)  
AE AG AL AM AT (utility model) AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR  
CU CZ (utility model) CZ DE (utility model) DE DK (utility model) DK DM  
DZ EC EE (utility model) EE ES FI (utility model) FI GB GD GE GH GM HR HU  
ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX  
MZ NO NZ OM PH PL PT RO RU SC SD SE SG SK (utility model) SK SL TJ TM TN  
TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW  
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SI SK  
TR  
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM  
Publication Language: English  
Filing Language: English  
Fulltext Word Count: 10245

Fulltext Availability:  
Detailed Description  
Claims

#### Detailed Description

... of information presentation and feedback from the user; multi-modal  
input ability including full duplex **voice** recognition **software** for  
both command and navigation purposes as well as natural language  
processing for notation and...

...the performance support system referred to as a knowledge store; an  
advanced Web server-based **middleware** that assembles and delivers, at  
high speed, data from the object-oriented database and delivers...and  
audio output device that for example, can be a headphone/microphone  
combination 260, a **speech recognition** module 270, and a manual  
**interface** , that can include a keypad, keyboard, slide, knob, button,  
switch, touch screen, and the like...

#### Claim

... of data objects comprises text.

10 The system of Claim 1, wherein the user **interface** comprises:  
n-microphone configured to accept user **voice** commands; and  
**speech recognition** module configured to convert the user **voice**  
commands to electronic requests that are provided to the processor. II.  
The system of Claim...

14/3,K/3 (Item 2 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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00806384

**NETWORK AND LIFE CYCLE ASSET MANAGEMENT IN AN E-COMMERCE ENVIRONMENT AND METHOD THEREOF**

**GESTION D'ACTIFS DURANT LE CYCLE DE VIE ET EN RESEAU DANS UN ENVIRONNEMENT DE COMMERCE ELECTRONIQUE ET PROCEDE ASSOCIE**

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US  
(Residence), US (Nationality)

Inventor(s):

MIKURAK Michael G, 108 Englewood Blvd., Hamilton, NJ 08610, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 38th Floor,  
2029 Century Park East, Los Angeles, CA 90067-3024, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200139030 A2 20010531 (WO 0139030)

Application: WO 2000US32324 20001122 (PCT/WO US0032324)

Priority Application: US 99444775 19991122; US 99447621 19991122

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CU CZ DE DK DZ EE ES FI GB  
GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK  
MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN  
YU ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 171499

Fulltext Availability:

Detailed Description

Detailed Description

... a digital receiver which is connected to. a channel bank. The application server be it **voice** (PBX), video (CODEC), or Data (Router or Switch) **interfaces** with the NGN via the channel bank. A session originates from the application which interacts...Kbps (thousand bits per second). This rate is not the rate required to send digitized **voice** per se. Rather, 64 Kbps is the rate required to send voice digitized with the ...

**14/3,K/4 (Item 3 from file: 349)**

DIALOG(R)File 349:PCT FULLTEXT

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00784140

**A SYSTEM, METHOD AND ARTICLE OF MANUFACTURE FOR A GLOBALLY ADDRESSABLE INTERFACE IN A COMMUNICATION SERVICES PATTERNS ENVIRONMENT**  
**SYSTEME, PROCEDE ET ARTICLE DE FABRICATION S'APPLIQUANT DANS UN ENVIRONNEMENT DE STRUCTURE DE SERVICES DE COMMUNICATIONS VIA UNE INTERFACE ADRESSABLE GLOBALEMENT**

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US  
(Residence), US (Nationality)

Inventor(s):

BOWMAN-AMUAH Michel K, 6426 Peak Vista Circle, Colorado Springs, CO 80918  
, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 1400 Page Mill  
Road, Palo Alto, CA 94304, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200116735 A2-A3 20010308 (WO 0116735)

Application: WO 2000US24198 20000831 (PCT/WO US0024198)

Priority Application: US 99387214 19990831

Designated States:

(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)

AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CU CZ DE DK DZ EE ES FI GB  
GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK  
MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN  
YU ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 150371

Fulltext Availability:

Detailed Description

Detailed Description

... file).

Biometric identification - the analysis of biological characteristics to  
verify individuals identify (e.g., fingerprints, **voice recognition** ,  
retinal scans).

Related to authentication, non-repudiation is a means of tagging a  
message in...of packetized data, Circuit Switching services establish  
physical circuits for the transfer of circuit-switched **voice** , fax,  
video, etc.

Circuit Switching

uses an end-to-end physical connection between the sender...

14/3,K/5 (Item 4 from file: 349)

DIALOG(R) File 349:PCT FULLTEXT

(c) 2004 WIPO/Univentio. All rts. reserv.

00784138

SYSTEM, METHOD, AND ARTICLE OF MANUFACTURE FOR A REQUEST BATCHER IN A  
TRANSACTION SERVICES PATTERNS ENVIRONMENT

SYSTEME, PROCEDE ET ARTICLE MANUFACTURE POUR MODULE DE MISE EN LOTS DES  
REQUETES DANS UN ENVIRONNEMENT CARACTERISE PAR DES SERVICES  
TRANSACTIONNELS

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US

(Residence), US (Nationality)

Inventor(s):

BOWMAN-AMUAH Michel K, 6426 Peak Vista Circle, Colorado Springs, CO 80918  
, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 1400 Page Mills Road, Palo Alto, CA 94304, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200116733 A2-A3 20010308 (WO 0116733)

Application: WO 2000US23885 20000831 (PCT/WO US0023885)

Priority Application: US 99387575 19990831

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CU CZ DE DK DZ EE ES FI GB GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 150393

Fulltext Availability:

Detailed Description

Detailed Description

... 165

Biometric identification - the analysis of biological characteristics to verify individuals identify (e.g., fingerprints, **voice recognition**, retinal scans).

Related to authentication, non-repudiation is a means of tagging a message in...

...Control for Windows 95; SecurID; Racals TrustMe Authentication Server;

Visionics Facelt; Sensars IrisIdent; Keyware Technologies **Voice**

Guardian; National

Registrys NRIdentity; Kerberos; VeriSip

The following are examples of products that perform authentication...

...Dynamics' SecurID Authentication Tokens

166

Racal's TrustMe Authentication Server

biometric security

Visionics' Facelt - face **recognition**

Sensar's IrisIdent - iris identification

Keyware Technologies' **Voice** Guardian - **voice recognition**

National Registry's NRIdentity - fingerprint **recognition**

keys and certificates

Kerberos - an encryption and key management protocol for third party authorization; vendors...

14/3,K/6 (Item 5 from file: 349)

DIALOG(R) File 349:PCT FULLTEXT

(c) 2004 WIPO/Univentio. All rts. reserv.

00784136

A SYSTEM, METHOD AND ARTICLE OF MANUFACTURE FOR BUSINESS LOGIC SERVICES  
PATTERNS IN A NETCENTRIC ENVIRONMENT

SYSTEME, PROCEDE ET ARTICLE DE FABRICATION POUR STRUCTURES DE SERVICES DE  
LOGIQUE DE COMMERCE DANS UN ENVIRONNEMENT S'ARTICULANT AUTOUR DE  
L'INTERNET

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US  
(Residence), US (Nationality)

Inventor(s):

BOWMAN-AMUAH Michel K, 6426 Peak Vista Circle, Colorado Springs, CO 80918  
, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 38th Floor,  
2029 Century Park East, Los Angeles, CA 90067-3024, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200116728 A2-A3 20010308 (WO 0116728)

Application: WO 2000US24197 20000831 (PCT/WO US0024197)

Priority Application: US 99387658 19990831

Designated States:

(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE  
ES FI GB GD GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU  
LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR  
TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 150863

Fulltext Availability:

Detailed Description

Detailed Description

... file).

Biometric identification - the analysis of biological characteristics to  
verify individuals identify (e.g., fingerprints, **voice recognition**,  
retinal scans).

165

Related to authentication, non-repudiation is a means of tagging a  
message...of packetized data, Circuit Switching services establish  
physical circuits for the transfer of circuit-switched **voice**, fax,  
video, etc.

Circuit Switching

uses an end-to-end physical connection between the sender...

14/3,K/7 (Item 6 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

(c) 2004 WIPO/Univentio. All rts. reserv.

00784134

A SYSTEM, METHOD AND ARTICLE OF MANUFACTURE FOR A CONSTANT CLASS COMPONENT  
IN A BUSINESS LOGIC SERVICES PATTERNS ENVIRONMENT

SYSTEME, PROCEDE ET ARTICLE MANUFACTURE UN COMPOSANT DE CLASSE DE CONSTANTE  
DANS UN ENVIRONNEMENT DE SCHEMAS DE SERVICES DE LOGIQUE D'AFFAIRES

14/3,K/8 (Item 7 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
(c) 2004 WIPO/Univentio. All rts. reserv.

00784132

A SYSTEM, METHOD AND ARTICLE OF MANUFACTURE FOR A LEGACY WRAPPER IN A  
COMMUNICATION SERVICES PATTERNS ENVIRONMENT  
SYSTEME, PROCEDE ET DISPOSITIF POUR MODULE D'HABILLAGE EXISTANT DANS UN  
ENVIRONNEMENT DE SCHEMAS DE SERVICES DE COMMUNICATION

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US  
(Residence), US (Nationality)

Inventor(s):

BOWMAN-AMUAH Michel K, 6426 Peak Vista Circle, Colorado Springs, CO 80918  
, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 1400 Page Mill  
Roadast, Palo Alto, CA 94304, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200116724 A2-A3 20010308 (WO 0116724)  
Application: WO 2000US24084 20000831 (PCT/WO US0024084)  
Priority Application: US 99386834 19990831

Designated States:

(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)

AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CU CZ DE DK DZ EE ES FI GB  
GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK  
MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN  
YU ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 150947

Fulltext Availability:

Detailed Description

Detailed Description

... Dynamics' SecurID Authentication Tokens

167

Racal's TrustMe Authentication Server

biometric security

Visionics' Facelt - face **recognition**

Sensar's IrisIdent - iris identification

Keyware Technologies' Voice Guardian - voice **recognition**

National Registry's NRIdentity - fingerprint **recognition**

keys and certificates

Kerberos - an encryption and key management protocol for third party  
authorization; vendors...Packetized

transferred through brief, temporary, logical connections between nodes  
includes data and packetized multimedia (video, **voice**, fax, etc.)

Circuit Switching includes the following functionality.

establishes end-to-end path for circuit...



14/3,K/9 (Item 8 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
(c) 2004 WIPO/Univentio. All rts. reserv.

00784125

SYSTEM, METHOD, AND ARTICLE OF MANUFACTURE FOR PIECEMEAL RETRIEVAL IN AN  
INFORMATION SERVICES PATTERNS ENVIRONMENT  
SYSTEME, PROCEDE ET ARTICLE DE FABRICATION DESTINES A LA RECHERCHE  
FRAGMENTAIRE DANS UN ENVIRONNEMENT DE MODELES DE SERVICES  
D'INFORMATIONS

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US  
(Residence), US (Nationality)

Inventor(s):

BOWMAN-AMUAH Michel K, 6426 Peak Vista Circle, Colorado Springs, CO 80918  
, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 38th Floor,  
2029 Century Park East, Los Angeles, CA 90067-3024, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200116705 A2-A3 20010308 (WO 0116705)

Application: WO 2000US24085 20000831 (PCT/WO US0024085)

Priority Application: US 99386433 19990831

Designated States:

(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)

AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM  
HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX  
NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW  
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 150355

Fulltext Availability:

Detailed Description

Detailed Description

... 165

Biometric identification - the analysis of biological characteristics to  
verify individuals identify (e.g., fingerprints, **voice recognition**,  
retinal scans).

Related to authentication, non-repudiation is a means of tagging a  
message in...of packetized data, Circuit Switching services establish  
physical circuits for the transfer of circuit-switched **voice**, fax,  
video, etc.

Circuit Switching

uses an end-to-end physical connection between the sender...

14/3,K/10 (Item 9 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
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00784124

**SYSTEM, METHOD, AND ARTICLE OF MANUFACTURE FOR A REQUEST SORTER IN A  
TRANSACTION SERVICES PATTERNS ENVIRONMENT  
SYSTEME, PROCEDE ET ARTICLE DE FABRICATION APPLIQUES DANS UN TRIEUR DE  
REQUETES D'UN ENVIRONNEMENT DE STRUCTURES DE SERVICES DE TRANSACTIONS**

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US

(Residence), US (Nationality)

Inventor(s):

BOWMAN-AMUAH Michel K, 6426 Peak Vista Circle, Colorado Springs, CO 80918  
, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 38th floor,  
2029 Century Park East, Los Angeles, CA 90067-3024, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200116704 A2-A3 20010308 (WO 0116704)

Application: WO 2000US24082 20000831 (PCT/WO US0024082)

Priority Application: US 99386715 19990831

Designated States:

(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)

AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM  
HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX  
NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW  
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 150733

Fulltext Availability:

Detailed Description

Detailed Description

... 165

Biometric identification - the analysis of biological characteristics to  
verify individuals identify (e.g., fingerprints, **voice recognition** ,  
retinal scans).

Related to authentication, non-repudiation is a means of tagging a  
message in...

...Dynamics' SecurID Authentication Tokens

166

Racal's TrustMe Authentication Server

biometric security

Visionics' Facelt - face **recognition**

Sensar's IrisIdent - iris identification

Keyware Technologies' **Voice** Guardian - **voice recognition**

National Registry's NRIdentity - fingerprint **recognition**

keys and certificates

Kerberos - an encryption and key management protocol for third party  
authorization; vendors...of packetized data, Circuit Switching services  
establish physical circuits for the transfer of circuit-switched **voice** ,  
fax, video, etc.

Circuit Switching

uses an end-to-end physical connection between the sender...

16/3,K/1 (Item 1 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
(c) 2004 European Patent Office. All rts. reserv..

01630227

Method and apparatus for speech synthesis program, recording medium,  
method and apparatus for generating constraint information and robot  
apparatus

Verfahren und Vorrichtung zum Sprachsyntheseprogramm, Aufzeichnungsmedium,  
Verfahren und Vorrichtung zur Erzeugung einer Zwangsinformation und  
Robotereinrichtung

Methode et appareil pour un programme de synthese de la parole, moyen  
d'enregistrement, methode et appareil pour la generation d'information  
de contrainte et appareil robot

PATENT ASSIGNEE:

Sony Corporation, (214031), 6-7-35 Kitashinagawa, Shinagawa-ku, Tokyo  
141-0001, (JP), (Applicant designated States: all)  
Sony France S.A., (2515841), 20-26, rue Morel, 92110 Clichy, (FR),  
(Applicant designated States: all)

INVENTOR:

Kobayashi, Erika, c/o Sony Corporation, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
Kobayashi, Kenichiro, c/o Sony Corporation, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
Kumakura, Toshiyuki, c/o Sony Corporation, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
Yamazaki, Nobuhide, c/o Sony Corporation, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
Akabane, Makoto, c/o Sony Corporation, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
Nitta, Tomoaki, c/o Sony Corporation, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
Oudeyer, Pierre-Yves, 11/13, Rue de l'Ep-e de Bois, 75005 Paris, (FR)

LEGAL REPRESENTATIVE:

Bertrand, Didier et al (55483), c/o S.A. FEDIT-LORIOT & AUTRES CONSEILS  
EN PROPRIETE INDUSTRIELLE 38, Avenue Hoche, 75008 Paris, (FR)

PATENT (CC, No, Kind, Date): EP 1345207 A1 030917 (Basic)

APPLICATION (CC, No, Date): EP 2002290658 020315;

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G10L-013/02

ABSTRACT WORD COUNT: 168

NOTE:

Figure number on first page: 1 2

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200338	3525
SPEC A	(English)	200338	13254
Total word count - document A			16779
Total word count - document B			0
Total word count - documents A + B			16779

Method and apparatus for speech synthesis program, recording medium,  
method and apparatus for generating constraint information and robot  
apparatus

said prosodic data the parameters of which have been changed by the parameter...of said constraint information, responsive to the emotion state discriminated by said discriminating means; and  
**speech synthesizing** means for **synthesizing** the **speech** based on said prosodic data, the parameters of which have been changed by the parameter...

16/3,K/2 (Item 2 from file: 348)  
DIALOG(R)File 348:EUROPEAN PATENTS  
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01539037

MAN-MACHINE INTERFACE UNIT CONTROL METHOD; ROBOT APPARATUS; AND ITS ACTION  
CONTROL METHOD

VERFAHREN ZUR STEUERUNG EINER MENSCH-MASCHINE-SCHNITTSTELLE, ROBOTORGERAET  
UND -STEUERUNG DAFUER

PROCEDE DE COMMANDE D'UNITE D'INTERFACE HOMME-MACHINE, DISPOSITIF ROBOTISE  
ET PROCEDE DE COMMANDE ASSOCIE

PATENT ASSIGNEE:

Sony International (Europe) GmbH, (2963490), Kemperplatz 1, 10785 Berlin,  
(DE), (Applicant designated States: all)

Sony Corporation, (214028), 7-35, Kitashinagawa 6-chome, Shinagawa-ku,  
Tokyo 141-0001, (JP), (Applicant designated States: all)

INVENTOR:

KEMP, Thomas, Heinrich-Hertz-Str. 1, 70327 Stuttgart, (DE)

KOMPE, Ralf, Heinrich-Hertz-Str. 1, 70327 Stuttgart, (DE)

TATO, Raquel, Heinrich-Hertz-Str. 1, 70327 Stuttgart, (DE)

FUJITA, Masahiro, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo  
141-0001, (JP)

MINAMINO, Katsuki, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo  
141-0001, (JP)

KAWAMOTO, Kenta, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo  
141-0001, (JP)

HORINAKA, Rika, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo 141-0001  
, (JP)

LEGAL REPRESENTATIVE:

Muller, Frithjof E., Dipl.-Ing. (8661), Muller Hoffmann & Partner  
Patentanwalte Innere Wiener Strasse 17, 81667 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 1406135 A1 040407 (Basic)  
WO 2002099545 021212

APPLICATION (CC, No, Date): EP 2002730881 020603; WO 2002JP5441 020603

PRIORITY (CC, No, Date): EP 2001113422 010601

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G05B-013/02; G06N-003/00; G06F-003/00;  
B25J-005/00; B25J-013/00

ABSTRACT WORD COUNT: 103

NOTE:

Figure number on first page: 001

LANGUAGE (Publication,Procedural,Application): English; English; Japanese

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200415	1687
SPEC A	(English)	200415	12855
Total word count - document A			14542
Total word count - document B			0

The user **speech recognition** unit 103 detects a sum of four emotions, namely the joy/pleasure (JOY/PLEASURE), sorrow...  
...Conference), a Naive Bayes classification algorithm), is here used as an example.

Specifically, the user **speech recognition** unit 103 includes a speech input unit 111, a characteristic value extraction unit 112, a...

...space, based on the sort and the likelihood of the emotion detected by the user **speech recognition** unit 103 and/or the user image recognition unit 104 and supplied from the short...

...user's current feeling.

Meanwhile, if the likelihood of the emotion detected by the user **speech recognition** unit 103 differs from the likelihood of the emotion detected by the user image recognition...

...using an average value of the two likelihoods. If the emotion detected by the user **speech recognition** unit 103 differs from the emotion detected by the user image recognition unit 104, the...

...CLAIMS apparatus as said target status.

26. The robot apparatus according to claim 24 further comprising:  
**speech recognition** means and picture recognition means;  
said status detection means detecting the feeling status as said...

...used as said target status.

34. The method according to claim 32 further comprising:  
a **speech recognition** step and an image recognition step;  
said status detection step detects the feeling status, as...

16/3,K/3 (Item 3 from file: 348)

DIALOG(R) File 348:EUROPEAN PATENTS

(c) 2004 European Patent Office. All rts. reserv.

01493243

**Method and apparatus for voice synthesis and robot apparatus**

**Verfahren und Vorrichtung zur Sprachsynthese und Roboter**

**Procede et dispositif de synthese de la parole et robot**

PATENT ASSIGNEE:

Sony France S.A., (2515841), 20-26, rue Morel, 92110 Clichy, (FR),  
(Applicant designated States: all)

Sony Corporation, (214028), 7-35, Kitashinagawa 6-chome, Shinagawa-ku,  
Tokyo 141-0001, (JP), (Applicant designated States: all)

INVENTOR:

Oudeyer, Pierre-Yves, 11/13 rue de l'Epee de Bois, 75005 Paris, (FR)  
Sabe, Kotaro, c/o Sony Corporation, 7-35 Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)

LEGAL REPRESENTATIVE:

Bertrand, Didier et al (55483), c/o S.A. FEDIT-LORIOT & AUTRES CONSEILS  
EN PROPRIETE INDUSTRIELLE 38, Avenue Hoche, 75008 Paris, (FR)

PATENT (CC, No, Kind, Date): EP 1256931 A1 021113 (Basic)

APPLICATION (CC, No, Date): EP 2001401203 010511;

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G10L-013/04; G10L-013/02; G10L-013/08

ABSTRACT WORD COUNT: 139

NOTE:

Figure number on first page: 1

16/3,K/4 (Item 4 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
(c) 2004 European Patent Office. All rts. reserv.

01471107

ROBOT DEVICE AND BEHAVIOR CONTROL METHOD FOR ROBOT DEVICE  
ROBOTERVORRICHTUNG UND VERHALTENSSTEUERUNG DIESER VORRICHTUNG  
DISPOSITIF ROBOTISE ET PROCEDE DE CONTROLE DU COMPORTEMENT D'UN TEL  
DISPOSITIF

PATENT ASSIGNEE:

Sony Corporation, (214031), 6-7-35 Kitashinagawa, Shinagawa-ku, Tokyo  
141-0001, (JP), (Applicant designated States: all)

INVENTOR:

FUJITA, Masahiro, c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
TAKAGI, Tsuyoshi, c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
HORINAKA, Rika, c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
YOKONO, Jun, c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
COSTA, Gabriel, c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
SHIMOMURA, Hideki, c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)  
MINAMINO, Katsuki, c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome,  
Shinagawa-ku, Tokyo 141-0001, (JP)

LEGAL REPRESENTATIVE:

Pilch, Adam John Michael (50481), D. YOUNG & CO., 21 New Fetter Lane,  
London EC4A 1DA, (GB)

PATENT (CC, No, Kind, Date): EP 1327504 A1 030716 (Basic)  
WO 2002032629 020425

APPLICATION (CC, No, Date): EP 2001974801 011011; WO 2001JP8953 011011

PRIORITY (CC, No, Date): JP 2000314524 001013

DESIGNATED STATES: AT; BE; CH; DE; FR; GB; LI

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: B25J-013/00; B25J-005/00; G06F-015/18

ABSTRACT WORD COUNT: 104

NOTE:

Figure number on first page: 12

LANGUAGE (Publication,Procedural,Application): English; English; Japanese  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200329	1289
SPEC A	(English)	200329	12785
Total word count - document A			14074
Total word count - document B			0
Total word count - documents A + B			14074

...SPECIFICATION by color segmentation.

Fig.20 is a block diagram showing a constituent unit which achieves  
**recognition** of the uttered **speech** .

Fig.21 shows an illustrative structure of HMM for inputting unknown  
languages.

Fig.22shows the results of **speech recognition** .

Fig.23 shows the information pertinent to the internal state.

Fig.24 shows the relationship...objects stated in a connection file

stored in a memory card 28 (Fig.2).

The **middle ware** layer 40 is positioned as an upper layer of the robotics server object 32, and...

...software items providing basic functions of the robot apparatus 1, such as picture processing or **speech** processing. The **application** layer 41 is located as an upper layer of the **middle ware** layer 40, and is a set of software items for deciding on the behavior of...

...1 based on the results of the processing by the software items making up the **middle ware** layer 40. Fig.4 shows specified software structures of the **middle ware** layer 40 and the application layer 41.

Referring to Fig.4, the middle ware layer...to find parameters therefor. The Hidden-Markov-Model (HMM), which is currently the mainstream in **speech recognition**, as later explained, is the technique of recognition which also belongs to this category. The...based on the picture information, and the sound perception part 125 is a part for **speech recognition** responsive to the **speech** input from a microphone. The following explanation is made on the processing carried out by...

...the shape analysis of an object as cropped by color segmentation.

#### (4-2-1-3) **Speech recognition**

As the **speech recognition**, the continuous **speech recognition** employing the HMM is used. This technique may be exemplified by that proposed in the...that 'booru' (ball)' is correctly acquired by unknown-1.

Moreover, since HMM is capable of **recognizing** the continuous **speech**, for the seventh speech from the top in Fig.22 the symbol 'kere' can be ...

...next to the label unknown-1 for the previously acquired label unknown-1.

In such **speech recognition** system, if a noun 'booru' is acquired, the robot apparatus 1 is able to kick...of this?', repeatedly confirms any input phoneme sequence that is effective for outputting from the **speech recognition** unit.

On the other hand, if the acquisition behavior by the effect on changes in...

16/3,K/5 (Item 5 from file: 348)

DIALOG(R) File 348:EUROPEAN PATENTS

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01385763

A communication platform for providing computer telephony integration services to remote subscribers, and associated method

Eine Kommunikationsplattform für das zur Verfügung stellen von Computerfernsprechintegration Dienstleistungen zu den Remoteteilnehmern und dazugehöriges Verfahren

Une plateforme de communications pour fournir des services d' integration telephonique par ordinateur a des abonnes eloignes et procede correspondant

PATENT ASSIGNEE:

Hewlett-Packard Company, A Delaware Corporation, (3016020), 3000 Hanover Street, Palo Alto, CA 94304, (US), (Applicant designated States: all)

16/3,K/6 (Item 6 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
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01359593

ROBOT DEVICE, ROBOT DEVICE ACTION CONTROL METHOD, EXTERNAL FORCE DETECTING  
DEVICE AND EXTERNAL FORCE DETECTING METHOD  
ROBOTER, VERFAHREN ZUR STEUERUNG EINER ROBOTERAKTION, VERFAHREN UND  
VORRICHTUNG ZUR ERFASSUNG VON EXTERNER KRAFT  
DISPOSITIF ROBOTIQUE, PROCEDE DE COMMANDE DE L'ACTION DU DISPOSITIF  
ROBOTIQUE, DISPOSITIF DE DETECTION DE FORCE EXTERIEURE, ET PROCEDE DE  
DETECTION DE FORCE EXTERIEURE

PATENT ASSIGNEE:

Sony Corporation, (214028), 7-35, Kitashinagawa 6-chome, Shinagawa-ku,  
Tokyo 141-0001, (JP), (Applicant designated States: all)

INVENTOR:

FUJITA, Masahiro c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome  
Shinagawa-ku, Tokyo 141-0001, (JP)

TAKAGI, Tsuyoshi c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome  
Shinagawa-ku, Tokyo 141-0001, (JP)

HASEGAWA, Rika c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome  
Shinagawa-ku, Tokyo 141-0001, (JP)

HANAGATA, Osamu c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome  
Shinagawa-ku, Tokyo 141-0001, (JP)

YOKONO, Jun c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome  
Shinagawa-ku, Tokyo 141-0001, (JP)

COSTA, Gabriel c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome  
Shinagawa-ku, Tokyo 141-0001, (JP)

SHIMOMURA, Hideki c/o SONY CORPORATION, 7-35, Kitashinagawa 6-chome  
Shinagawa-ku, Tokyo 141-0001, (JP)

LEGAL REPRESENTATIVE:

Pilch, Adam John Michael et al (50481), D. YOUNG & CO., 21 New Fetter  
Lane, London EC4A 1DA, (GB)

PATENT (CC, No, Kind, Date): EP 1195231 A1 020410 (Basic)  
WO 200172478 011004

APPLICATION (CC, No, Date): EP 2001917788 010402; WO 2001JP2867 010402

PRIORITY (CC, No, Date): JP 2000101364 000331; JP 2000280871 000914

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: B25J-009/16; B25J-013/00; B25J-013/08;  
G06F-003/14

ABSTRACT WORD COUNT: 134

NOTE:

Figure number on first page: 15

LANGUAGE (Publication,Procedural,Application): English; English; Japanese  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200215	1510
SPEC A	(English)	200215	24853
Total word count - document A			26363
Total word count - document B			0
Total word count - documents A + B			26363

...ABSTRACT A1

A robot (1) is proposed which includes a **speech recognition** unit  
(101) to detect information supplied simultaneously with or just before  
or after detection of...



result...each of channels including a color recognition unit 201, shape recognition unit 202, and a **speech recognition** unit 203, and for example a binary ID (identification information) is appended to each of ...

...short-term memory 211 of an associative memory 210. A speech prototype ID from the **speech recognition** unit 203 is passed through a semantics converter (SC) 204 to the short-term memory...

...by a color segmentation module and supplies the data to the associative memory 210. The **speech recognition** unit 203 outputs a prototype ID of a word uttered by the user or trainer...designed for minimum action based on an ethological model, switching to a tree using a **speech recognition** and an operation test, and a test for the learning. The operation test is made...

16/3,K/7 (Item 1 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
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00942457

SYSTEMS AND METHODS FOR ACCESSING REPORTING SERVICES

SYSTEMES ET PROCEDES DONNANT ACCES A DES SERVICES DE SIGNALISATION

Patent Applicant/Assignee:

WORLDCOM INC, 500 Clinton Center Drive, Clinton, MS 39056, US, US  
(Residence), US (Nationality)

Inventor(s):

LESKUSKI Walter J, 807 Young Place, Frederick, MD 21702, US,  
TRIVEDI Prakash A, 14700 Flager Court, Centreville, VA 20120, US,  
BUSCH Eric M, 120 16th Ave Ct., Hiawatha, IA 52233, US,

Legal Representative:

GROLZ Edward W (agent), Scully, Scott, Murphy & Presser, 400 Garden City Plaza, Garden City, NY 11530, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200275574 A1 20020926 (WO 0275574)

Application: WO 2002US8640 20020320 (PCT/WO US0208640)

Priority Application: US 2001276923 20010320; US 2001276953 20010320; US 2001276954 20010320; US 2001276955 20010320; US 200297935 20020315

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ  
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR  
LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI  
SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 7569

Fulltext Availability:

Claims

Claim

... as a keyboard, a mouse, a microphone, a pen, a biometric input device,

such as **voice recognition** device, etc. The output device 270 may include any conventional mechanism or combination of  
6...

...in real time, obtain real time billing. information, and generate reports using a rules-centric **middleware** core. In one embodiment, a customer may perform these functions through a single point of...

...1 0 uses a Common Object Request Broker Architecture (CORBA) based publish@and-subscribe messaging **middleware** to integrate the different components of the OSS 130. Other techniques for integrating the different ...unit 350 includes an eXtensible Program Management (XPM) unit 6 1 0, one or more **voice portal application** servers 620, and a customer directory database 630. The XPM unit 610 receives user profile...

...the process management system 3 1 0 and stores this information for use by the **voice portal application** servers 620. The XPM unit 610 may also receive other information, such as information identifying...

...etc.) by which the customer wishes to receive the service(s) provided.  
16

[00631 The **voice portal application** servers 620 may include one or more servers that interact with the XPM unit 61...

...distribution and shipping services, insurance services, health and pharmaceutical services, manufacturing services, and the like. **Voice portal application** servers 620 may also provide data collection unit 336 with information regarding what services are...

...may then pass this information on to the billing unit 337 for billing purposes. The **voice portal application** servers 620 may be located at the OSS 130 or distributed throughout the network I 10. The customer directories 630 may store information relating to the services provided by the **voice portal application** servers 620. For example, the customer directories 630 may store stock quotes, current weather forecasts...the OSS 130 offers a unique combination of products and services (e.g., billing, reporting, **voice portal applications**, VoIP services, etc.). In addition to the user having to login (or register) with the...

16/3,K/8 (Item 2 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
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00806392

**TECHNOLOGY SHARING DURING ASSET MANAGEMENT AND ASSET TRACKING IN A  
NETWORK-BASED SUPPLY CHAIN ENVIRONMENT AND METHOD THEREOF  
PARTAGE TECHNOLOGIQUE LORS DE LA GESTION ET DU SUIVI DU PARC INFORMATIQUE  
DANS UN ENVIRONNEMENT DU TYPE CHAINE D'APPROVISIONNEMENT RESEAUTEE, ET  
PROCEDE ASSOCIE**

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US  
(Residence), US (Nationality)

Inventor(s):

MIKURAK Michael G, 108 Englewood Blvd., Hamilton, NJ 08610, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 38th Floor,

2029 Century Park East, Los Angeles, CA 90067-3024, US,  
Patent and Priority Information (Country, Number, Date):  
Patent: WO 200139086 A2 20010531 (WO 0139086)  
Application: WO 2000US32310 20001122 (PCT/WO US0032310)  
Priority Application: US 99444653 19991122; US 99447623 19991122  
Designated States:  
(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)  
AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES  
FI GB GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA  
MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ  
UA UG UZ VN YU ZW  
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR  
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM  
Publication Language: English  
Filing Language: English  
Fulltext Word Count: 156214

Fulltext Availability:  
Detailed Description

Detailed Description

... allowing simultaneous multi application  
access)  
Intelligent Peripheral (Media Control)  
Provides services such as DTMF parsing, **Voice** prompting, Messaging,  
**Speech recognition**, Text to **Speech**, Text to Fax, etc.  
Protocol Conversion (Policy Management)  
Receives session requirements from Rules database  
Selects...Kbps (thousand bits per second). This rate is not the rate  
required to send digitized **voice** per se. Rather, 64Kbps is the rate  
required to send **voice** digitized with the Pulse Code Modulated (PCM)  
technique. Many other methods for digitizing voice exist...

16/3,K/9 (Item 3 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
(c) 2004 WIPO/Univentio. All rts. reserv.

00806389

**SCHEDULING AND PLANNING BEFORE AND PROACTIVE MANAGEMENT DURING MAINTENANCE  
AND SERVICE IN A NETWORK-BASED SUPPLY CHAIN ENVIRONMENT  
PROGRAMMATION ET PLANIFICATION ANTICIPEE, ET GESTION PROACTIVE AU COURS DE  
LA MAINTENANCE ET DE L'ENTRETIEN D'UN ENVIRONNEMENT DU TYPE CHAINE  
D'APPROVISIONNEMENT RESEAUTEE**

Patent Applicant/Assignee:

ACCENTURE LLP, 1661 Page Mill Road, Palo Alto, CA 94304, US, US  
(Residence), US (Nationality)

Inventor(s):

MIKURAK Michael G, 108 Englewood Boulevard, Hamilton, NJ 08610, US,

Legal Representative:

HICKMAN Paul L (agent), Oppenheimer Wolff & Donnelly, LLP, 38th Floor,  
2029 Century Park East, Los Angeles, CA 90067-3024, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200139082 A2 20010531 (WO 0139082)  
Application: WO 2000US32228 20001122 (PCT/WO US0032228)  
Priority Application: US 99447625 19991122; US 99444889 19991122

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM  
HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX  
NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW  
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR  
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 152479

Fulltext Availability:

Detailed Description

Detailed Description

... allowing simultaneous multi application  
access)

Intelligent Peripheral (Media Control)

- Provides services such as DTMF parsing, **Voice** prompting, Messaging,  
**Speech recognition** , Text to **Speech** , Text to Fax, etc.

Protocol Conversion (Policy Management)

- Reccives session requirements from Rules database

64...call 3602 by a switch 1206-1210 detennines if the call 3602 is an  
enhanced **voice** service/network audio response system (EVS/NARS) call.  
An EVS/NARS is an audio menu...

16/3,K/10 (Item 4 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00748852 \*\*Image available\*\*

**SYSTEM AND PROCESS FOR VOICE-CONTROLLED INFORMATION RETRIEVAL**

**SYSTEME ET PROCEDE DE CONSULTATION D'INFORMATIONS A COMMANDE VOCALE**

Patent Applicant/Assignee:

INROAD INC, Market Place Tower 1250, 2025 First Avenue, Seattle, WA 98121  
, US, US (Residence), US (Nationality)

Inventor(s):

PROFIT Jack H Jr, 14746 Glenacres Road SW, Vashon Island, WA 98070, US

BROWN N Gregg, 2011 Fifth Avenue N., Seattle, WA 98109, US

MEZEY Peter S, 505 West Roy Street, Apt. #202, Seattle, WA 98119, US

COLOMBO Lianna M, 7726 19th Avenue NW, Seattle, WA 98117, US

Legal Representative:

ANABLE James W, Christensen O'Connor Johnson & Kindness PLLC, Suite 2800,  
1420 Fifth Avenue, Seattle, WA 98101, US

Patent and Priority Information (Country, Number, Date):

Patent: WO 200062278 A1 20001019 (WO 0062278)

Application: WO 2000US9181 20000406 (PCT/WO US0009181)

Priority Application: US 99289784 19990409

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES  
FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU  
LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT

5/3,K/1 (Item 1 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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00895444 \*\*Image available\*\*

**SYSTEM AND METHOD FOR TRACKING AND DOCUMENTING CHANGES TO COMPUTER READABLE  
CODE**

**SYSTEME ET PROCEDE DE SUIVI ET DE DOCUMENTATION DES MODIFICATIONS FAITES  
DANS LE CODE MACHINE**

Patent Applicant/Assignee:

MINTAKA TECHNOLOGY GROUP, 450 South Detroit Street, Suite 1, Los Angeles,  
CA 90036, US, US (Residence), US (Nationality)

Inventor(s):

BERTERO Anthony R, 12525 Pinehurst Street, El Monte, CA 91732, US,  
ROSENBERG Milton D, 1305 Ocean Front Walk, Venice, CA 90291, US,

Legal Representative:

KLIVANS Norman R (et al) (agent), Skjerven Morrill MacPherson LLP, Suite  
700, 25 Metro Drive, San Jose, CA 95110, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200229561 A1 20020411 (WO 0229561)

Application: WO 2001US42447 20011001 (PCT/WO US0142447)

Priority Application: US 2000679132 20001004

Designated States:

(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ  
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR  
LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU SD SE SG SI SK  
SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 16035

Fulltext Availability:

Detailed Description

Detailed Description

... knowledge and background of the individual maintaining and developing  
a software application, maintenance of the **software application** is  
highly - **Idependent** on the quality of the application and also on the  
detailed documentation of the various...

19/3,K/1 (Item 1 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
(c) 2004 WIPO/Univentio. All rts. reserv.

01110195 \*\*Image available\*\*

**TELEPHONY-BASED INVENTORY ACCESS SYSTEM ESPECIALLY WELL SUITED TO ACCESSING  
OF INVENTORIES IN THE TRAVEL INDUSTRY**

**SYSTEME D'ACCES A L'INVENTAIRE BASE SUR LA TELEPHONIE ET PARTICULIEREMENT  
BIEN ADAPTE A L'ACCES AUX INVENTAIRES DANS L'INDUSTRIE DU VOYAGE**

Patent Applicant/Inventor:

BILLERA Donna, 1620-26th Street, Santa Monica, CA 90404, US, US  
(Residence), US (Nationality)

Legal Representative:

MAHER Pamela G (et al) (agent), Brown Raysman Millstein Felder & Steiner  
LLP, Suite 711, 1880 Century Park East, Los Angeles, CA 90067, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200432014 A1 20040415 (WO 0432014)

Application: WO 2003US31299 20031003 (PCT/WO US03031299)

Priority Application: US 2002416109 20021003

Designated States:

(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ  
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR  
LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC SD  
SE SG SK SL SY TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW

(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT RO SE  
SI SK TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 15043

International Patent Class: G10L-021/00 ...

Fulltext Availability:

Detailed Description

Claims

English Abstract

In an inventory access system, an integrated **voice recognition** module  
with a **speech** processor is used to **interface** a user with an  
intelligent switch having access to databases containing profiling  
information about travelers...

Detailed Description

... with web browsers or a I O Wireless-Application-Protocol

("WAP")-enabled device) interface via **middleware** programming with the  
GDSs and CRSs. The **middleware** allows communication between the client  
device and the GDSs and CRSs, notwithstanding that each of these  
components might use different protocols. The **middleware** thus often is  
referred to as a "booking engine" or a  
"switching engine."

5 The...

...information such as travel profiles, business rules, and quality control  
and accounting criteria, and a **middleware** switching engine that can

accommodate the multiple protocols of the telephony components and the database...

...with any applicable business rules or accounting procedures.

At the heart of the system, a **middleware** switch engine 40 is provided that is capable, on the one hand, of accepting and...

Claim

... that transmits data to and receives data from a user via a telephone;

(b) a **speech synthesis** module that translates information received from the user

**interface ;**

(c) an inventory interface that transmits data between the inventory access system and one or...

...wherein the inventory databases containing information about items in an inventory, and wherein the inventory **interface** communicates translated instructions from the **speech synthesis** module to the inventory databases; (d) a library containing one or more library databases, wherein...

...fleet.

4 The inventory access system of claim 1, wherein the at least one user **interface** is an integrated **voice recognition** module. . A method for facilitating **voice** -activated inventory access using a system that has automated primary capabilities and live assistance capabilities...

...module, wherein the switch module directs and controls the flow of information between the inventory **interface** , the library, and user **interface** via the **voice recognition** module;

wherein the user selects a system transaction from a menu in the library, is...

19/3,K/2 (Item 2 from file: 349)

DIALOG(R) File 349:PCT FULLTEXT

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01045522 \*\*Image available\*\*

**ROBUST MULTI-FACTOR AUTHENTICATION FOR SECURE APPLICATION ENVIRONMENTS**  
**SYSTEME ROBUSTE D'AUTHENTIFICATION A PLUSIEURS FACTEURS POUR ENVIRONNEMENTS**  
**D'APPLICATIONS SECURISES**

Patent Applicant/Assignee:

HEWLETT-PACKARD COMPANY, 3000 Hanover Street, Palo Alto, CA 94304, US, US  
(Residence), US (Nationality)

Inventor(s):

ARMINGTON John P, 4350 Karls Gate Drive, Marietta, GA 30068, US,

HO Purdy P, 4 Longfellow Place Apt #3404, Boston, MA 02114, US,

Legal Representative:

LEE Denise A (agent), Hewlett-Packard Company, IP Administration, P.O.  
Box 272400, Mail Stop 35, Fort Collins, CO 80527-2400, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200375540 A2-A3 20030912 (WO 0375540)

Application: WO 2003US5880 20030226 (PCT/WO US03005880)

Priority Application: US 200286123 20020228

Designated States:

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AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ  
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR  
LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SC SD SE SG  
SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW  
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT SE SI  
SK TR  
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 8164

...International Patent Class: G10L-017/00

Fulltext Availability:

Detailed Description

Detailed Description

... The elements of voice portal subsystem are as shown in Figure 6: a telephone system **interface** 220, a **speech recognition** module 240, a TTS module 250, a touch-tone module 260, and an audio l...to her over a browser 620.

Returning now to Figure 6, in this exemplary implementation, **middleware** in the form of Netegrity's SiteMinder product suite is used to abstract the policy...

19/3,K/3 (Item 3 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00840059 \*\*Image available\*\*

**VOICE-INTERACTIVE MARKETPLACE PROVIDING TIME AND MONEY SAVING BENEFITS AND  
REAL-TIME PROMOTION PUBLISHING AND FEEDBACK  
MARCHE VOCAL INTERACTIF APPORTANT DES AVANTAGES PERMETTANT D'ECONOMISER DU  
TEMPS ET DE L'ARGENT ET FOURNISSANT UNE PUBLICATION DE PROMOTION ET UNE  
RETROACTION EN TEMPS REEL**

Patent Applicant/Assignee:

DIALSURF INC, Two N. First Street, San Jose, CA 95131, US, US (Residence)  
, US (Nationality)

Inventor(s):

ALPDEMIR Ahmet, 2318 Oak Flat Road, San Jose, CA 95131, US,

Legal Representative:

ANANIAN R Michael (et al) (agent), Flehr Hohbach Test Albritton & Herbert  
LLP, Suite 3400, 4 Embarcadero Center, San Francisco, CA 94111-4187, US

Patent and Priority Information (Country, Number, Date):

Patent: WO 200173750 A2-A3 20011004 (WO 0173750)

Application: WO 2001US9705 20010326 (PCT/WO US0109705)

Priority Application: US 2000534700 20000324; US 2000219079 20000718

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ  
EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS  
LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ



TM TR TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 33769

Main International Patent Class: G10L-015/22

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... capability.

In another aspect, the invention provides an operating model for a telephonebased audio or **speech recognition** and text to **voice interfaced** goods and services information, enhanced 41 1 type directory assistance and referral service having merchant...Menlo Park, CA 94025. A VOS-Nuance integration Run-Time Link Library (RLL) provides an **interface** between the Parity VOS software and the Nuance **speech recognition** system. An embodiment of a VOS-Nuance Integration Run-Time Link Library (RLL) is available...

...application specific program modules used for the inventive Talk411 system and method include a Nuance **voice recognition interface** module and a SpeechPro module which converts numeric, date and currency values to speech. Other...is anticipated that Version 8 will be released shortly.

Version 8 may provide some additional **voice** processing or **recognition** capability, or provide an **interface** or other integration with Nuance **Voice Recognition** (and possibly including others, such as SpeechWorks software). The interface software is presently a piece...service centers, and the like as are known in the telephony and server technologies. The **Middleware** 474 is the layer of software that integrates - 63 operations of the Web Server, LDAP...implemented from an Internet or other networked computing environment using conventional keyboard, mouse, and display **interfaces** or with the addition of **voice** input and **speech - recognition** capability.

Therefore it should be understood that the system and method described relative to the...

Claim

... database and for retrieving and editing said information, at least a component of said merchant **interface** comprising a **voice - recognition interface** and an internet **interface**; and a consumer **interface** for inputting **voice** commands and data having a **voice I 0 recognition** component and for receiving merchant information and processed information from said database in response to...

19/3,K/4 (Item 4 from file: 349)

DIALOG(R) File 349:PCT FULLTEXT

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00771362    \*\*Image available\*\*

**DISTRIBUTED OBJECT ORIENTED ARCHITECTURE FOR SPEECH UNDERSTANDING**  
**ARCHITECTURE DISTRIBUEE ORIENTEE OBJET POUR COMPREHENSION VOCALE**

Patent Applicant/Assignee:

BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY, 81 Newgate Street,  
London EC1A 7AJ, GB, GB (Residence), GB (Nationality), (For all  
designated states except: US)

Patent Applicant/Inventor:

BREEN Andrew Paul, 50 Westerfield Road, Ipswich IP4 2UT, GB, GB  
(Residence), GB (Nationality), (Designated only for: US )  
DOWNEY Simon, 191 Fountains Road, Ipswich IP2 9TJ, GB, GB (Residence), GB  
(Nationality), (Designated only for: US )

Legal Representative:

MUSKER David Charles, R.G.C. Jenkins & Co., 26 Caxton Street, London SW1H  
0RJ, GB

Patent and Priority Information (Country, Number, Date):

Patent: WO 200104876 A1 20010118 (WO 0104876)  
Application: WO 99GB2240 19990713 (PCT/WO GB9902240)

Designated States:

(Protection type is "patent" unless otherwise stated - for applications  
prior to 2004)

CA US

Publication Language: English

Filing Language: English

Fulltext Word Count: 13879

Main International Patent Class: **G10L-015/26**

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... Linux on the other computers 10-60, and the networking software may be  
Novell Netware.

**Middleware** software 200

Communicating through the networking software is a so-called  
" **middleware** " program layer 200 on each of the computers 10 The function  
of the " **middleware** " is to allow different programs on different  
computers to share information and call functions on each other. In this  
embodiment, the " **middleware** " layer 200 is provided by Object Request  
Brokers (ORB) consistent with the Common Object Request...9 1997 and also  
available at

<http://www.cs.wustl.edu/~schmidt/oopsia.html>

The **middleware** software 200 provides at least one event channel 116  
for each applications program...another program. The format of the event  
data for each program is defined by the **interface** description of that  
program.

The **speech synthesis** program 126 is provided with two event queues;  
an  
input event channel 152 at which...

...0 is arranged to send messages to,  
and receive messages from, the graphical user interface ( **GUI** ) program  
120; the audio **interface** program 122; the **speech recogniser** program  
124; the text **speech** program 126; and, optionally (not shown in Figure

File 9:Business & Industry(R) Jul/1994-2004/Sep 17  
(c) 2004 The Gale Group  
File 15:ABI/Inform(R) 1971-2004/Sep 18  
(c) 2004 ProQuest Info&Learning  
File 16:Gale Group PROMT(R) 1990-2004/Sep 20  
(c) 2004 The Gale Group  
File 20:Dialog Global Reporter 1997-2004/Sep 20  
(c) 2004 The Dialog Corp.  
File 47:Gale Group Magazine DB(TM) 1959-2004/Sep 20  
(c) 2004 The Gale group  
File 75:TGG Management Contents(R) 86-2004/Sep W2  
(c) 2004 The Gale Group  
File 80:TGG Aerospace/Def.Mkts(R) 1986-2004/Sep 20  
(c) 2004 The Gale Group  
File 88:Gale Group Business A.R.T.S. 1976-2004/Sep 17  
(c) 2004 The Gale Group  
File 98:General Sci Abs/Full-Text 1984-2004/Jul  
(c) 2004 The HW Wilson Co.  
File 112:UBM Industry News 1998-2004/Jan 27  
(c) 2004 United Business Media  
File 141:Readers Guide 1983-2004/Jul  
(c) 2004 The HW Wilson Co  
File 148:Gale Group Trade & Industry DB 1976-2004/Sep 20  
(c)2004 The Gale Group  
File 160:Gale Group PROMT(R) 1972-1989  
(c) 1999 The Gale Group  
File 275:Gale Group Computer DB(TM) 1983-2004/Sep 20  
(c) 2004 The Gale Group  
File 264:DIALOG Defense Newsletters 1989-2004/Sep 20  
(c) 2004 The Dialog Corp.  
File 484:Periodical Abs Plustext 1986-2004/Sep W2  
(c) 2004 ProQuest  
File 553:Wilson Bus. Abs. FullText 1982-2004/Jul  
(c) 2004 The HW Wilson Co  
File 570:Gale Group MARS(R) 1984-2004/Sep 20.  
(c) 2004 The Gale Group  
File 608:KR/T Bus.News. 1992-2004/Sep 20  
(c)2004 Knight Ridder/Tribune Bus News  
File 620:EIU:Viewswire 2004/Sep 17  
(c) 2004 Economist Intelligence Unit  
File 613:PR Newswire 1999-2004/Sep 20  
(c) 2004 PR Newswire Association Inc  
File 621:Gale Group New Prod.Annou.(R) 1985-2004/Sep 20  
(c) 2004 The Gale Group  
File 623:Business Week 1985-2004/Sep 17  
(c) 2004 The McGraw-Hill Companies Inc  
File 624:McGraw-Hill Publications 1985-2004/Sep 17  
(c) 2004 McGraw-Hill Co. Inc  
File 634:San Jose Mercury Jun 1985-2004/Sep 18  
(c) 2004 San Jose Mercury News  
File 635:Business Dateline(R) 1985-2004/Sep 18  
(c) 2004 ProQuest Info&Learning  
File 636:Gale Group Newsletter DB(TM) 1987-2004/Sep 20  
(c) 2004 The Gale Group  
File 647:CMP Computer Fulltext 1988-2004/Sep W2  
(c) 2004 CMP Media, LLC  
File 696:DIALOG Telecom. Newsletters 1995-2004/Sep 20  
(c) 2004 The Dialog Corp.  
File 674:Computer News Fulltext 1989-2004/Aug W4  
(c) 2004 IDG Communications

File 810:Business Wire 1986-1999/Feb 28  
(c) 1999 Business Wire  
File 813:PR Newswire 1987-1999/Apr 30  
(c) 1999 PR Newswire Association Inc  
File 587:Jane's Defense&Aerospace 2004/Aug W4  
(c) 2004 Jane's Information Group

Set	Items	Description
S1	129240	MIDDLEWARE??? OR MIDDLE()WARE??
S2	3376	S1(3N)LAYER?
S3	171841	(SPEECH?? OR VOICE??)(3N)(APPLICATION?? OR SOFTWARE??)
S4	11429	(SPEECH?? OR VOICE??)(3N)ENGINE??
S5	2	(SOFTWARE?? OR APPLICATION?? OR ENGIN??)(3N)(IDEPENDENT??)
S6	328610	(SOFTWARE?? OR APPLICATION?? OR ENGIN??)(3N)(INTERFACE?? OR GUI?? OR GRAPHICAL()USER()INTERFACE?)
S7	7241	(SPEECH?? OR VOICE??)(3N)(RECOGNI????? OR SYNTHES?????)(3N)-(INTERFACE?? OR GUI?? OR GRAPHICAL()USER()INTERFACE?)
S8	253410	API OR APPLICATION()PROGRAM????()INTERFACE?
S9	534	S2 AND (COUPL???? OR BETWEEN OR NEGOTIAT???? OR LINK??? OR MEDIAT????) AND APPLICATIONS AND ENGINE??
S10	821	AU=(SCHMID P? OR SCHMID, P? OR LIPE R? OR LIPE, R? OR CHAMBERS R? OR CHAMBERS, R? OR CONNELL E? OR CONNELL, E?)
S11	0	S10 AND S1
S12	0	S10 AND (S3 OR S4)
S13	593	S1(S)(S3 OR S4)
S14	0	S1 AND S5
S15	2	S5 AND (S3 OR S4)
S16	33	S13(S)S7
S17	14	RD (unique items)
S18	212	S13(S)((SPEECH?? OR VOICE??)(3N)(RECOGNI? OR SYNTHES?))
S19	27	S18(S)(INDEPENDEN? OR GENERAL?)
S20	21	RD (unique items)
S21	17	S20 NOT (S15 OR S16)

15/3,K/1 (Item 1 from file: 16)  
DIALOG(R)File 16:Gale Group PROMT(R)  
(c) 2004 The Gale Group. All rts. reserv.

03746680 Supplier Number: 45318475 (USE FORMAT 7 FOR FULLTEXT)  
**IBM Begins Testing PowerPC**  
InformationWeek, p15  
Feb 6, 1995  
Language: English Record Type: Fulltext  
Document Type: Magazine/Journal; Tabloid; General Trade  
Word Count: 278

... PCs and its OS/2 for PowerPC operating system; both slated for late-spring release. **Idendent software** vendors (ISVs) included in the first tests of OS/2 for PowerPC say they are...

...with 16 Mbytes of RAM, a CD -ROM drive, stereo jacks, and dictation and navigation **speech** -recognition **software** , according to testers.

One disappointment: The rumored 615 PowerPC chip, which was reported to run...

15/3,K/2 (Item 1 from file: 647)  
DIALOG(R)File 647:CMP Computer Fulltext  
(c) 2004 CMP Media, LLC. All rts. reserv.

01041956 CMP ACCESSION NUMBER: IWK19950206S0014  
**IBM Begins Testing PowerPC - PCs and an OS/2 operating system are expected by spring** (Top Story)  
Brian Gillooly  
INFORMATIONWEEK, 1995, n 513, PG15  
PUBLICATION DATE: 950206  
JOURNAL CODE: IWK LANGUAGE: English  
RECORD TYPE: Fulltext  
SECTION HEADING: Top Of The Week  
WORD COUNT: 254

TEXT:

... PCs and its OS/2 for PowerPC operating system; both slated for late-spring release. **Idendent software** vendors (ISVs) included in the first tests of OS/2 for PowerPC say they are...

... with 16 Mbytes of RAM, a CD-ROM drive, stereo jacks, and dictation and navigation **speech** -recognition **software** , according to testers.

One disappointment: The rumored 615 PowerPC chip, which was reported to run...

?

17/3,K/1 (Item 1 from file: 15)  
DIALOG(R)File 15:ABI/Inform(R)  
(c) 2004 ProQuest Info&Learning. All rts. reserv.

02614258 378066491  
**Microsoft touts SALT voice spec**  
Schwartz, Ephraim  
InfoWorld v25n27 PP: 16 Jul 14, 2003  
ISSN: 0199-6649 JRNL CODE: IFW  
WORD COUNT: 936

...ABSTRACT: the first public beta of Speech Server will ship with Beta 3 of Microsoft's **Speech Application SDK (Software Development Kit)** in what signals speech technology's return to the corporate agenda. Due for manufacturing release before mid-2004, the product will include a text-to-speech engine from SpeechWorks - Microsoft's own **speech - recognition engine** - and a telephony **interface** manager. The offering will also include **middle - ware** that is being designed in partnership with Santa Clara, Calif.-based Intel and Dallas-based...

... the Microsoft product to an enterprise telephony infrastructure. But it is the server's SALT (**Speech Application Language Tags**) **voice** browser that sets Microsoft apart from the standards crowd. Rather than adhering to VXML (Voice...

...TEXT: 2004, the product will include a text-to-speech engine from SpeechWorks - Microsoft's own **speech - recognition engine** - and a telephony **interface** manager. The offering will also include **middle - ware** that is being designed in partnership with Santa Clara, Calif.-based Intel and Dallas-based...

17/3,K/2 (Item 1 from file: 16)  
DIALOG(R)File 16:Gale Group PROMT(R)  
(c) 2004 The Gale Group. All rts. reserv.

10731824 Supplier Number: 108052949 (USE FORMAT 7 FOR FULLTEXT)  
**VoiceGenie introduces new PervasiveGenie speech recognition solution running on IBM Software.**

PR Newswire, pNA  
Sept 23, 2003  
Language: English Record Type: Fulltext  
Document Type: Newswire; Trade  
Word Count: 989

.... content.

As part of this agreement, VoiceGenie plans to integrate with the IBM's WebSphere **Voice Application Access (WVAA)** solution, **middleware** software that extends ...Providing a voice portal framework that allows enterprises to deliver information to mobile employees using **voice** as the **interface**, its **voice recognition** technology can link telephone callers to enterprise data and applications previously accessible only via computer...

17/3,K/3 (Item 2 from file: 16)  
DIALOG(R)File 16:Gale Group PROMT(R)  
(c) 2004 The Gale Group. All rts. reserv.

09800211 Supplier Number: 86424372 (USE FORMAT 7 FOR FULLTEXT)  
**Leading German Daily Newspaper Gives Online News a Voice with ScanSoft  
RealSpeak and ASR.**

Business Wire, p2110

May 29, 2002

Language: English Record Type: Fulltext

Document Type: Newswire; Trade

Word Count: 853

... in Heidelberg in 1997 and develops, produces and sells a middleware platform for building extensive **speech** automation **applications** under the brand name robot 5. The platform enables rapid development of **speech recognition** and **speech synthesis applications** by way of a structured **graphical user interface**. All **voice** robots products are supported by a full range of services, including custom development, training, maintenance...

17/3,K/4 (Item 3 from file: 16)  
DIALOG(R)File 16:Gale Group PROMT(R)  
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08205843 Supplier Number: 68950083 (USE FORMAT 7 FOR FULLTEXT)  
**Gold Systems Aligns with Avaya, Nuance to Provide Standards-Based,  
Voice-Driven Solutions for Enterprise-Level Customer Contact Centers.**

Business Wire, p0115

Jan 10, 2001

Language: English Record Type: Fulltext

Document Type: Newswire; Trade

Word Count: 1451

... Version 8.0 platform, Vonetix is voice and wireless interface middleware that connects databases, enterprise **software** packages, **speech recognition engines** and wireless mobile-commerce **interfaces**. Vonetix helps eliminate the need for companies to develop separate back-end interfaces to applications...

17/3,K/5 (Item 1 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

36247400

**SUPERCOMM 2004 Exhibitor Profiles**

BUSINESS WIRE

June 21, 2004

JOURNAL CODE: WBWE LANGUAGE: English RECORD TYPE: FULLTEXT

WORD COUNT: 10668

... LumenVox.com Press Area URL: [www.LumenVox.com/Press](http://www.LumenVox.com/Press) LumenVox's award-winning, suite of **speech** recognition software includes the **Speech Driven Information System (SDIS)**, a GUI toolkit wrapped around the **Speech Recognition Engine (SRE)**, a low level API designed to slip into any telephony **application**, and **LV Speech Tuner** a complete maintenance tool to improve recognition of any **speech application**. LumenVox is a **speech** recognition company with over a decade of telephony experience. Technology is based of many best...

... their suite of software and worldwide partners, they can design, develop, deploy, and maintain any **speech application**. Company: Magnetek, Inc. Ticker Symbol: MAG Booth/Stand: 27720 Media Contact: Melbie Vinson, 972-484...

17/3,K/6 (Item 2 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

23071918 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**SCANSOFT: Leading German daily newspaper gives online news a voice with ScanSoft RealSpeak and ASR; ScanSoft text to speech and automatic speech recognition used by F.A.Z.; Electronic Media GmbH to speech enable FAZ.NET**

M2 PRESSWIRE  
May 29, 2002

JOURNAL CODE: WMPR LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 793

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... speech automation applications under the brand name robot 5. The platform enables rapid development of **speech recognition and speech synthesis applications** by way of a structured **graphical user interface**. All voice robots products are supported by a full range of services, including custom development...

17/3,K/7 (Item 3 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

13334711 (USE FORMAT 7 OR 9 FOR FULLTEXT).  
**Executives From BroadVision and Cellmania Will Deliver Keynote Addresses at Mobile Commerce Conference and Expo**

PR NEWSWIRE

October 17, 2000

JOURNAL CODE: WPRW LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 789

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... technologies will also be showcased, including: e-commerce applications, software and middleware providers, wireless components, **speech recognition software**, mapping **software**, users **interface** designs, network carriers and operating system vendors.

For more information on Mobile Commerce at eBusiness...

17/3,K/8 (Item 4 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

12406960 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**Mobile Commerce at eBusiness Conference and Expo To Debut in New York in December**  
PR NEWSWIRE



August 15, 2000

JOURNAL CODE: WPRW LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 570

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... will be showcased as well including: e-commerce applications, software and middleware providers, wireless components, **speech recognition software**, mapping **software**, users **interface** designs, network carriers and operating system vendors. Mobile Commerce will also attract wireless service providers...

17/3,K/9 (Item 5 from file: 20)

DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

11685881 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Mobile Commerce Conference and Expo Announces Conference Program; New Event Focuses On Wireless E-business Applications**

PR NEWSWIRE

June 26, 2000

JOURNAL CODE: WPRW LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 623

(USE FORMAT 7 OR 9 FOR FULLTEXT)

... broad-based technologies that include: e-commerce applications, software and middle-ware providers, wireless components, **voice recognition software**, location **software**, user **interface** designers, network carriers, and operating system vendors. The show will also attract such vendors as...

17/3,K/10 (Item 6 from file: 20)

DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

03027804

**Motorola, Visa, BroadVision and Others Team with Nuance To Introduce V-Commerce**

PR NEWSWIRE

October 06, 1998

JOURNAL CODE: WPRW LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 1437

... Commerce applications also incorporate a common set of business rules, application programming interfaces and transaction **middleware**, which are shared between **speech** and Web **applications**. The database makes up the third tier of a V-Commerce application. The V- Commerce...

...Commerce Application Development Three new technologies will enable easy and rapid development of V- Commerce **applications**: \* Java and ActiveX **Speech** APIs -- Nuance recognition and verification functionality will be accessible through Java and ActiveX APIs enabling...

...using popular Java and ActiveX development environments. \* **SpeechObjects** -- Nuance **SpeechObjects** are a set of reusable **speech application**

components designed to speed the development of speech systems. Using the API's described above...

... recognition easy for all developers. Visual Basic, Java and C++ programmers can now easily integrate **speech applications** into existing systems without a lengthy learning curve. SpeechObjects are designed to be portable so...

... sites. VoxML, used in conjunction with SpeechObjects, enables HTML developers to easily extend their Web **applications** to incorporate **speech** recognition. About the V-Commerce Alliance The V-Commerce Alliance includes leading technology software, services...

... working with Nuance to build and deploy V-Commerce applications. In addition to natural language **speech** recognition, V-Commerce **applications** will typically include e-commerce and application servers, packaged applications and telephony hardware and software...

17/3,K/11 (Item 1 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB  
(c)2004 The Gale Group. All rts. reserv.

13359053 SUPPLIER NUMBER: 73746349 (USE FORMAT 7 OR 9 FOR FULL TEXT)  
**Gold, Avaya And Nuance Ally For Voice-Driven Enterprise Solutions.(Product Information)(Brief Article)**

Customer Interaction Solutions, 19, 9, 29  
March, 2001

DOCUMENT TYPE: Brief Article LANGUAGE: English RECORD TYPE:  
Fulltext

WORD COUNT: 135 LINE COUNT: 00016

TEXT:

...s Version 8 CONVERSANT System for interactive voice response (IVR). Vonetix is voice and wireless **interface middleware** that connects databases, enterprise **software** packages, **speech recognition engines** and wireless, mobile commerce **interfaces**. The integration is expected to benefit Avaya customers who implement the network-based integrated solution ...

17/3,K/12 (Item 1 from file: 613)

DIALOG(R)File 613:PR Newswire  
(c) 2004 PR Newswire Association Inc. All rts. reserv.

01042212 20030923TO089 (USE FORMAT 7 FOR FULLTEXT)  
**VoiceGenie Introduces New PervasiveGenie Speech Recognition Solution**  
PR Newswire

Tuesday, September 23, 2003 13:43 EDT

JOURNAL CODE: PR LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT

DOCUMENT TYPE: NEWSWIRE

WORD COUNT: 911

TEXT:

...VoiceXML Gateway  
software on IBM middleware, the new solution is designed to allow customers to  
**voice** -enable existing web **applications** via IBM's WebSphere Application

Server

(WAS) and will enable any IBM WebSphere Application Server...

...content.

As part of this agreement, VoiceGenie plans to integrate with the IBM's WebSphere **Voice Application Access (WVAA)** solution, **middleware** software that extends the WebSphere portal infrastructure and programming model to voice. Providing a voice portal framework that allows enterprises to deliver information to mobile employees using **voice** as the **interface**, its **voice**

**recognition** technology can link telephone callers to enterprise data and applications previously accessible only via computer...

...Forum, VoiceGenie and IBM have always demonstrated industry foresight in promoting low-cost, open-standards

**speech applications**. Today, we announce the exciting PervasiveGenie **speech**

platform that will allow VoiceGenie and IBM to aggressively increase its leadership in the **voice applications** space," said Stuart Berkowitz, President

and CEO, VoiceGenie Technologies. "VoiceGenie is committed to delivering market...

...solutions to our global enterprise and telecom service provider customers. With integration to IBM's **speech** recognition and **middleware software**, future collaboration in the area of multimodal applications, as well planned increased coverage of our...

...and 2.0 specifications, allows enterprises and telecom carriers to develop and deploy sophisticated IVR **applications**, **speech**-enabled services, and voice portals. Engineered within a open standards-based architecture with high levels...

...performance, and reliability, the platform has provided the infrastructure for the development of hundreds of **speech applications** worldwide and is currently answering millions of calls for customers each day.

The solution will...

...applications more quickly and simply running VoiceGenie's VoiceXML Gateway software on standards-based IBM **middleware**, "

said Rodney Adkins, General Manager, IBM Pervasive Computing Division.

Additionally, VoiceGenie will be making a...

17/3,K/13 (Item 1 from file: 636)

DIALOG(R) File 636:Gale Group Newsletter DB(TM)

(c) 2004 The Gale Group. All rts. reserv.

05647993 Supplier Number: 108901467 (USE FORMAT 7 FOR FULLTEXT)

**VOICEGENIE RUNS PERVASIVEGENIE SPEECH PLATFORM ON IBM SOFTWARE.**

Audiotex Update, v15, n11, pNA

Nov 1, 2003

Language: English Record Type: Fulltext

Document Type: Newsletter; Trade

Word Count: 696

As part of this agreement, VoiceGenie plans to integrate with the IBM's WebSphere **Voice Application Access (WVAA)** solution, **middleware** software that extends the WebSphere portal infrastructure and programming model to voice. Providing a voice portal framework that allows enterprises to deliver information to mobile employees using **voice** as the **interface**, its **voice recognition** technology can link telephone callers to enterprise data and applications previously accessible only via computer...

17/3,K/14 (Item 1 from file: 674)

DIALOG(R) File 674:Computer News Fulltext

(c) 2004 IDG Communications. All rts. reserv.

107732

**Voice-activated services gaining attention**

**SPEECH RECOGNITION: VXML, SALT aid development.**

Byline: STEPHEN LAWSON

Journal: Network World Page Number: 28

Publication Date: August 11, 2003

Word Count: 1255 Line Count: 113

Text:

... HTML applications it uses on the Web for selected services and let MCI create an **interface** between those **applications** and a **speech recognition** system. Now when club members move they can enter a change of address without using...

... by calling in to an automated system, says Marcello Typrin, director of product marketing at **speech software** vendor Nuance Communications. Providing a **speech**-based interface to **applications** is a good thing for companies to outsource to a carrier, says Mark Plakias, an...

... while leading existing vendors to offer alternatives to their proprietary software platforms using VXML interpreter **software**. Meanwhile, the **Speech Application Language Tags (SALT)** standard, backed by Cisco, Intel and Microsoft, also is coming on the...

... VoiceGenie's product is an example of how the specification can work. The company makes **middleware** that runs on Linux. That **middleware** is the **interface** between **speech recognition** systems that process what a caller says and VXML applications that answer or carry out...

... caller requests, says Eric Jackson, vice president of strategy and business development at VoiceGenie. Traditionally, **interfaces** between **speech recognition** systems and back-end applications have come in the form of proprietary **software** that **speech** recognition platform vendors have written for their own systems, according to Zelos Group's Plakias. The advent of VXML makes **voice**-enabled **applications** less dependent on the platforms on which they run. As soon as each platform maker...

... for Verizon call centers that also are being offered to other carriers and corporations. "With **Voice XML**, the **application** you build is really yours, regardless of what systems you want to deploy," says Marie Meteer, director of call center solutions at BBN. Once an **application** for a **voice**-activated service has been written, it doesn't have to be rebuilt from scratch if...

21/3,K/1 (Item 1 from file: 9)  
DIALOG(R) File 9:Business & Industry(R)  
(c) 2004 The Gale Group. All rts. reserv.

2113077 Supplier Number: 02113077 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**Sequoia Introduces XML-based Middleware**  
(Sequoia Software (Columbia, MD), with Microsoft, has launched Interchange  
98 middleware)  
Health Data Management, v 6, n 4, p 18  
April 1998  
DOCUMENT TYPE: Journal ISSN: 1069-5699 (United States)  
LANGUAGE: English RECORD TYPE: Fulltext  
WORD COUNT: 147

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:

New **middleware** based on Extensible Mark-up Language, or XML, and tailored for the health care market...

...Software, Columbia, Md., in conjunction with Microsoft Corp., Redmond, Wash., has introduced Interchange 98. The **middleware** works with Health Level 7 standards to simplify the flow of clinical data among disparate information systems. Sequoia's Interchange 98 uses XML, a subset of the Internet's standard **generalized** markup language. It also uses Kona, a standard in development designed to help health care organizations organize specialty-specific clinical data for XML. Sequoia is selling the **middleware** packaged with Microsoft's Back Office suite of products. At HIMSS, the company demonstrated Interchange 98 by linking systems from nine vendors. Three companies, Lernout & Hauspie, which sells **speech recognition software**; Datx Engstrom, which sells anesthesia monitors; and Infosys, which sells practice management software, already have...

21/3,K/2 (Item 1 from file: 16)  
DIALOG(R) File 16:Gale Group PROMT(R)  
(c) 2004 The Gale Group. All rts. reserv.

09973860 Supplier Number: 90163263 (USE FORMAT 7 FOR FULLTEXT)  
**Fonix Announces VoiceCentral For PocketPC, Enabling Hands-Free PDA  
Interaction With Dynamic Voice Interface.**  
Business Wire, p2327  
August 6, 2002  
Language: English Record Type: Fulltext  
Document Type: Newswire; Trade  
Word Count: 910

... pitch, speed, and volume to customize a particular voice to personal preferences. To accomplish Automatic **Voice Recognition** (ASR), VoiceCentral offers advanced Speaker- **Independent** (SI) technology that enables users to begin talking to their PDA with no voice training...

...native Pocket PC applications--a key advantage that makes VoiceCentral more user-friendly than older **voice** -activated Pocket PC **applications** which require users to enter a **middleware** interface or learn new **software**.

**Voice Activation**

Once activated by the push of a button, VoiceCentral is controlled

completely by voice...

21/3,K/3 (Item 2 from file: 16)  
DIALOG(R)File 16:Gale Group PROMT(R)  
(c) 2004 The Gale Group. All rts. reserv.

06070279 Supplier Number: 53543697 (USE FORMAT 7.FOR FULLTEXT)

**CTI Market Growth And Mainstream Acceptance On 1999**

**Agenda.(computer-telephone integration)**

Communications Today, pNA

Jan 7, 1999

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 943

(USE FORMAT 7 FOR FULLTEXT)

**TEXT:**

...their first taste of CTI technology. "We've seen the first indication that CTI in **general** is making a move from being basically in the domain of the call center to moving to the desk of the **general** knowledge worker," said Ken Landoline, analyst for Norwell, Mass.-based Giga Information Group. Landoline said...

...of it." Another segment of the CTI industry that continued to grow was telephony-based **voice recognition applications**. "With companies like Nuance and ALTech (now SpeechWorks), there's very fast growth there," Hills

...and ACD equivalents that are using the PC platform." The development of the call center/ **middleware** marketplace was a big step for the market in 1998, Landoline contended. "With companies like GeoTel and Genesys, the call center/ **middleware** market has been tremendous," Landoline said. "They're doing what should have been done years...

21/3,K/4 (Item 3 from file: 16)  
DIALOG(R)File 16:Gale Group PROMT(R)  
(c) 2004 The Gale Group. All rts. reserv.

05690822 Supplier Number: 54416705 (USE FORMAT 7 FOR FULLTEXT)

**Digest.**

Health Data Management, pFAUL99109003

April, 1998

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 2803

... standards for health care identifiers and transaction processing codes.

Sequoia Introduces XML-based Middleware

New **middleware** based on Extensible Mark-up Language, or XML, and tailored for the health care market...

...Software, Columbia, Md., in conjunction with Microsoft Corp., Redmond, Wash., has introduced Interchange 98. The **middleware** works with Health Level 7 standards to simplify the flow of clinical data among disparate information systems. Sequoia's Interchange 98 uses XML, a subset of the Internet's standard **generalized** markup language. It also uses Kona, a

standard in development designed to help health care organizations organize specialty-specific clinical data for XML. Sequoia is selling the **middleware** packaged with Microsoft's Back Office suite of products. At HIMSS, the company demonstrated Interchange 98 by linking systems from nine vendors. Three companies, Lernout & Hauspie, which sells **speech recognition software**; Datx Engstrom, which sells anesthesia monitors; and Infosys, which sells practice management software, already have...

21/3,K/5 (Item 1 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

31489221  
**VoiceGenie and Sun form strategic alliance for deployment of next generation open architecture speech solutions**  
CANADA NEWSWIRE  
October 01, 2003  
JOURNAL CODE: WCNW LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 1056

... new and existing applications even as the environment evolves. The VoiceGenie platform has received numerous **independent** product awards. Officially founded in January 2000, VoiceGenie's early work on its core product...

21/3,K/6 (Item 2 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

26193236  
**CablesEdge Software conducts trial for Century 21 Landstars Realty Inc.**  
CANADA NEWSWIRE  
November 22, 2002  
JOURNAL CODE: WCNW LANGUAGE: English RECORD TYPE: FULLTEXT  
WORD COUNT: 684

... cablesedge.com . Century 21 Landstars Realty Inc., based in Richmond Hill, Ontario, has over 80 **independent** associate brokers and sales representatives. For more information, please contact (905) 707-1188 or (416)...

... Technologies, a developer of thin client, web-based software for wired and wireless markets; CablesEdge **Software**, a developer of **voice**-interactive, **software** solutions for connecting broadband to wireless technology for home and business; eSalveo Corp., a developer...

21/3,K/7 (Item 3 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

25600388 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**QNX Neutrino RTOS to Power Hitachi's Biscayne Platform for Telematics Development**  
PR NEWSWIRE (US)  
October 21, 2002

JOURNAL CODE: WPRU    LANGUAGE: English    RECORD TYPE: FULLTEXT  
WORD COUNT: 621

... past, few development platforms focused specifically on the telematics industry, and the ones that did **generally** lacked the horsepower to support multiple applications such as voice recognition and Java. As a...

... Neutrino RTOS, the Biscayne platform allows OEMs to build and test a rich array of **middleware** applications and respond to market demand for fully integrated telematics solutions.

21/3,K/8        (Item 4 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

23885977 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**HeyAnita Announces Speech Application Language Tags -- SALT -- Browser;  
FreeSpeech SALT Browser Supports Microsoft's .NET Speech SDK and Visual  
Studio .NET**  
BUSINESS WIRE  
July 15, 2002  
JOURNAL CODE: WBWE    LANGUAGE: English    RECORD TYPE: FULLTEXT  
WORD COUNT: 653

... applications and is a key player in the growing SALT ecosystem," said X.D. Huang, **general** manager of the .NET Speech Technologies group at Microsoft. "By responding quickly to the growing demand for SALT applications and platforms, HeyAnita is empowering customers to deploy **speech applications** that fully leverage their Web investments." "HeyAnita's support of SALT is totally aligned with...

... We deliver solutions that give companies choice at every level; including programming language of choice, **speech recognition engine** of choice and telephony hardware of choice." Providing voice access to a wide variety of...

... Contributor in January 2002. The SALT Forum aims to create an open, royalty-free, platform- **independent** standard for speech enabling multimodal and telephony applications. SALT will make possible multimodal and telephony...

... PCs, wireless personal digital assistants (PDAs) and telephones. About HeyAnita Inc. HeyAnita is a leading **voice software** company focused on providing an interactive voice and multimodal interface to any device. HeyAnita's...

... includes the FreeSpeech(TM) Platform, FreeSpeech(TM) Browsers (SALT and VoiceXML) as well as prepackaged **voice applications**, developer tools and professional services. Companies worldwide using HeyAnita's voice solutions include Sprint PCS...

...HeyAnita Korea). HeyAnita Inc. is a privately held company headquartered in Los Angeles, CA. Sample **voice applications** can be heard by calling HeyAnita's technology showcase: 1-800-44-ANITA. For more...

... browser components, and framework components that allow ASP.NET Web developers to extend their Web **applications** with **speech recognition**



for multimodal (audio in, visual out) and voice-only interaction. The beta version of the Microsoft .NET Speech SDK allows developers to build **speech** -enabled Web **applications** and interact with them using Microsoft Internet Explorer client components that ship with the SDK...

21/3,K/9 (Item 5 from file: 20)  
DIALOG(R)File 20:Dialog Global Reporter  
(c) 2004 The Dialog Corp. All rts. reserv.

18144919 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
**LERNOUT & HAUSPIE: Lernout & Hauspie speech products announces L&H Speech Recognition ASDK for PlayStation 2; Flexible middleware enables easy integration of speech recognition features into games and edutainment titles; Speech recognition increases playe**

M2 PRESSWIRE

August 02, 2001

JOURNAL CODE: WMPR LANGUAGE: English RECORD TYPE: FULLTEXT

WORD COUNT: 706

... has made the L&H Speech Recognition ASDK (Application Software Development Kit) for PlayStation 2 **generally** available. The ASDK allows developers to easily integrate speech recognition features into games and edutainment...

... strategy games increases player interactivity and enhances the overall gaming experience. L&H's ASDK **middleware** will be showcased for the first time from the 2nd to 3rd of August in...

21/3,K/10 (Item 1 from file: 613)  
DIALOG(R)File 613:PR Newswire  
(c) 2004 PR Newswire Association Inc. All rts. reserv.

00840497 20021021NEM005 (USE FORMAT 7 FOR FULLTEXT)  
**QNX Neutrino RTOS to Power Hitachi's Biscayne Platform for**

PR Newswire

Monday, October 21, 2002 08:33 EDT

JOURNAL CODE: PR LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT

DOCUMENT TYPE: NEWSWIRE

WORD COUNT: 661

TEXT:

...dynamic scalability and fault-tolerance of QNX Neutrino allows Biscayne to support a variety of **middleware** applications, thus speeding overall development cycles and time to market for manufacturers.

In the past, few development platforms focused specifically on the telematics industry, and the ones that did **generally** lacked the horsepower to support multiple **applications** such as **voice recognition** and Java. As a result, OEMs struggled to build the sophisticated and feature-rich solutions...  
...Neutrino RTOS, the Biscayne platform allows OEMs to build and test a rich array of **middleware** applications

and respond to market demand for fully integrated telematics solutions.  
"The Biscayne platform lets...

...Unit at Hitachi Semiconductor (America) Inc. "Since Biscayne is high-powered and can support multiple **middleware** technologies, the need for a dependable OS is paramount.  
QNX's track record for making...

...goal of COMET is to provide vertically integrated telematics solutions to the automotive industry, galvanize **middleware** pieces from third-party vendors into one cohesive solution, formalize partnerships within the telematics ecosystem...

21/3,K/11 (Item 2 from file: 613)  
DIALOG(R) File 613:PR Newswire  
(c) 2004 PR Newswire Association Inc. All rts. reserv.

00751450 20020422SFM035 (USE FORMAT 7 FOR FULLTEXT)  
**Microsoft's In-Car Speech System Promotes Enhanced Driving**  
PR Newswire  
Monday, April 22, 2002 03:00 EDT  
JOURNAL CODE: PR LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT  
DOCUMENT TYPE: NEWSWIRE  
WORD COUNT: 1,304

...Industry Support  
The speech system in Windows CE for Automotive 3.5 supports phonetic-based **speech** recognition and human-sounding text-to-speech technologies through SAPI 5.0. The system also offers...

...handling  
incoming requests and interactions, enabling the speech system to work easily and seamlessly with **applications** from **speech** engine vendors and **speech application** developers.

Microsoft has joined with many speech vendors to build **speech** recognition and text-to- **speech engines** that are compatible with Windows CE for Automotive 3.5 via the SAPI 5.0...

...ScanSoft recently developed a SAPI 5.0-compliant version of the RealSpeak Compact text-to- **speech engine** ."

"The **speech** system in Windows CE for Automotive 3.5 provides developers with the tools to easily...

...Internet and wireless-enabled solutions driven by speech," said D. Lynn Shepherd, vice president and **general** manager for Mobile and Wireless at Fonix. "These solutions can range from Internet data access...

...s a  
key success factor."  
"Windows CE for Automotive is a powerful platform for emerging  
**speech** -enabled automotive **applications** ," said Nobuaki Tanaka, senior  
managing  
director of Asahi Kasei. "With SAPI 5.0 compliance, our VORERO  
**speech - recognition engine** can be easily integrated in a wide range of  
automotive devices by developers worldwide."  
"Windows..."

...major car manufacturers and tier-1 suppliers in Japan," said Tomoaki  
Nakamura,  
manager of the **Middleware** System Design Department, Semiconductor and  
Integrated Circuits, at Hitachi. "Microsoft's SAPI 5.0 is..."

21/3,K/12 (Item 3 from file: 613)  
DIALOG(R)File 613:PR Newswire  
(c) 2004 PR Newswire Association Inc. All rts. reserv.

00663659 20011024LAW092 (USE FORMAT 7 FOR FULLTEXT)  
**FAAST - the Fonix Framework Sets Standard Speech**  
PR Newswire  
Wednesday, October 24, 2001 12:50 EDT  
JOURNAL CODE: PR LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT  
DOCUMENT TYPE: NEWSWIRE  
WORD COUNT: 924

TEXT:  
...to-market and supports virtually all ASR and TTS engines on the  
market today. This **middleware** enables a developer to write to these  
engines  
through SAPI, even though the TTS engine...

...month) and the FAAST  
Framework provide that level of flexibility."  
Mark Hamilton, Vice President and **General** Manager of the CT and  
Server  
Group at Fonix Corporation, states, "To ensure that the..."

...Framework  
addresses the needs of IVR, contact center, and CRM solution providers who  
want to **voice** -enable an **application** , we've worked closely, over the  
last few  
years, with companies across various industries in...

...now. Fonix is committed to providing the tools  
that customers need to effectively integrate diverse **speech engines** and  
to  
promote the use of natural-user interfaces."

Uses of FAAST  
For some applications...

21/3,K/13 (Item 1 from file: 636)  
DIALOG(R)File 636:Gale Group Newsletter DB(TM)  
(c) 2004 The Gale Group. All rts. reserv.

05045165      Supplier Number: 76934230    (USE FORMAT 7 FOR FULLTEXT)  
**Lernout & Hauspie speech products announces L&H Speech Recognition ASDK for PlayStation 2; Flexible middleware enables easy integration of speech recognition features into games and edutainment titles; Speech recognition increases player interactivity and enhances overall gaming experience.**

M2 Presswire, pNA

August 2, 2001

Language: English      Record Type: Fulltext

Document Type: Newswire; Trade

Word Count:      811

...      today announced that its Speech and Language Technologies Division (SLT) has made the L&H **Speech Recognition ASDK (Application Software Development Kit)** for PlayStation 2 **generally** available. The ASDK allows developers to easily integrate **speech recognition** features into games and edutainment titles. Employing **speech recognition** in adventure, role-playing or strategy games increases player interactivity and enhances the overall gaming experience. L&H's ASDK **middleware** will be showcased for the first time from

**21/3,K/14      (Item 2 from file: 636)**

DIALOG(R) File 636:Gale Group Newsletter DB(TM)

(c) 2004 The Gale Group. All rts. reserv.

03860994      Supplier Number: 48404994    (USE FORMAT 7 FOR FULLTEXT)

**ML Could Ease Exchange Of Health Data**

Health Data Network News, pN/A

April 6, 1998

Language: English      Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count:      1056

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

...are among the companies blazing the XML trail. Explaining XML As a subset of standard **generalized** markup language, a widely used Internet programming code, XML has its origin in hypertext markup...

...toward XML. In partnership with Microsoft, Sequoia Software Corp., Columbia, Md., recently introduced XML-based **middleware** geared to health care technology vendors and providers. By using XML and the Internet, Sequoia...

...systems, Mason adds. Pioneering Vendors Several vendors already have licensed Sequoia's new XML-based **middleware**, described as a "transaction server," and will embed it into their own software. These include...

...of health care information networking software; InfoSys, a Schaumburg, Ill.-based vendor of practice management **software**; and Lernout & Hauspie **Speech Products**, a Burlington, Mass.-based vendor of **voice recognition** technology. The standard licensing cost for Sequoia Interchange98 is 15% of the list price of...

**21/3,K/15      (Item 1 from file: 696)**

DIALOG(R) File 696:DIALOG Telecom. Newsletters

(c) 2004 The Dialog Corp. All rts. reserv.

00644790

**CTI PAST, PRESENT AND FUTURE Market Growth And Mainstream Acceptance On 1999 Agenda**

CTI NEWS

December 15, 1998 VOL: 2 ISSUE: 25 DOCUMENT TYPE: NEWSLETTER

PUBLISHER: PHILLIPS BUSINESS INFORMATION

LANGUAGE: ENGLISH

WORD COUNT: 1073

RECORD TYPE: FULLTEXT

(c) PHILLIPS PUBLISHING INTERNATIONAL All Rts. Reserv.

TEXT:

...CTI past and predict CTI future.

"We've seen the first indication that CTI in **general** is making a move from being basically in the domain of the call center to moving to the desk of the **general** knowledge worker," says Ken Landoline, analyst for Norwell, Mass.-based Giga Information Group. Landoline says...

...of it."

Another segment of the CTI industry that continued to grow was telephony-based **voice recognition applications**.

"With companies like Nuance and ALTech (now SpeechWorks), there's very fast growth there," Hills...and ACD equivalents that are using the PC platform."

The development of the call center/ **middleware** marketplace was a big step for the market in 1998, Landoline says.

"With companies like GeoTel and Genesys, the call center/ **middleware** market has been tremendous," Landoline says.

"They're doing what should have been done years...over the next 10 years, according to research from

Burlington, Mass.-based Ovum Inc., an **independent** technology analyst group. Ovum's report, "Unified Messaging Services: Market Strategies," points to the Internet...

21/3,K/16 (Item 1 from file: 674)

DIALOG(R)File 674:Computer News Fulltext

(c) 2004 IDG Communications. All rts. reserv.

112965

**Toward the mobile enterprise, step by step**

**With improved devices, apps and infrastructure, wireless is making headway as a solid new data center technology. Analyst Mark Lowenstein offers a 10-point evaluation guide.**

Byline: By Mark Lowenstein

Journal: Network World Page Number: 3

Publication Date: August 23, 2004

Word Count: 1321 Line Count: 125

Text:

... major wireless operators. These factors made for complex wireless projects involving a veritable circus of **middleware**, gateway and system integrator vendors. As a result, outside of BlackBerry, which counts about 1...

... several fronts: \* Wireless networks have improved. Coverage is better,

and 2.5G networks such as **General** Packet Radio Service/Enhanced Data Rates for GSM Evolution and Code Division Multiple Access 1x...

... applications with high input requirements, provide devices with qwerty keyboards or perhaps some level of **voice recognition**. For heavy use while driving, consider a good car kit to improve reception and provide...

... up speed. This is where developments in location services, presence and multi-modal (such as **voice** recognition and text-to- **speech** ) **applications** might help optimize the mobile experience. Lowenstein is managing director of Mobile Ecosystem, a leading...

21/3,K/17 (Item 2 from file: 674)

DIALOG(R)File 674:Computer News Fulltext

(c) 2004 IDG Communications. All rts. reserv.

044302

**Desktop computer-telephone integration; Fact or fiction?**

**Protocols abound, but rationalizing them against a welter of proprietary systems is tough.**

Byline: David Rhode

Journal: Network World Page Number: 35

Publication Date: May 15, 1995

Word Count: 713 Line Count: 65

Text:

...the Multi-vendor Integration Protocol (MVIP) - have enabled development of software-based fax and interactive **voice** -response **applications** without the need to buy the proprietary boxes that are characteristic of voice peripherals. These PC bus protocols let add-in boards - such as those used for fax, **speech recognition** or text-to- **speech** conversion - interoperate. But users who install SCSA- or MVIP-compliant **voice** processing **applications** in hardware- **independent** telephony servers on LANs have only a piece of the puzzle. They still need call...

... Windows 95, basic computer telephony capability could soon be in the hands of millions. But **middleware** is needed to provide a sophisticated front end for the end user. To make user...

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English

Databases selected: Multiple databases...

[What's New](#)**Article View**<< [Back to Results](#)< [Previous](#) Article 4 of 6 [Next](#) >[Publisher Information](#)☐ Mark Article [Abstract](#) , [Full Text](#)**①Lucent and Unisys Propel Speech Technology Deployment with Expanded Alliance***Business Editors/Hi-Tech Writers. Business Wire. New York: Mar 8, 1999. pg. 1*>> [Jump to full text](#)

Author(s): [Business Editors/Hi-Tech Writers](#)  
Publication title: [Business Wire. New York: Mar 8, 1999. pg. 1](#)  
Source Type: Wire feed  
ProQuest document ID: 39534717  
Text Word Count: 1015  
Article URL: [http://gateway.proquest.com/openurl?url\\_ver=Z39.88-2004&res\\_dat=xri:pqd&rft\\_val\\_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&rft\\_dat=xri:pqd:did=000](http://gateway.proquest.com/openurl?url_ver=Z39.88-2004&res_dat=xri:pqd&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&rft_dat=xri:pqd:did=000)

**More Like This** >> [Show Options for finding similar articles](#)**Abstract** (Article Summary)

Under terms of the agreement, ①Lucent will integrate NLSA with its CentreVu Response Solutions, a suite of offerings that provides customer care applications based on Integrated Voice Response (IVR) technology. CentreVu Response Solutions is based on Lucent's INTUITY CONVERSANT platform.

The integration of the two companies' technologies dramatically simplifies the development of natural language understanding speech telephony applications, making speech systems accessible to a broader market. As a result of the agreement, ①Unisys pioneering NLSA technology now will be available to Lucent IVR developers worldwide, enabling them to build complex speech-based applications for CentreVu Response Solutions more quickly and easily.

Unisys NLSA is also the only natural language technology that is **speech-recognizer independent**, offering ①Lucent developers a common **interface** for developing spoken language applications without being tied to the speech recognition engine deployed. This allows developers to "snap" speech recognition engines in and out of their programs based on business requirements or technology improvements.

**Full Text** (1015 words)*Copyright Business Wire Mar 8, 1999*

BLUE BELL, Pa.--(BUSINESS WIRE)--March 8, 1999--

## Integration of Tools from Speech Technology Leaders Ease and

## Accelerate Development of Mass-Market Speech Applications

①Unisys Corporation and ①Lucent Technologies, Inc. today announced an agreement allowing ①Lucent to license ①Unisys award-winning Natural Language Speech Assistant (NLSA) tool suite.

Under terms of the agreement, ①Lucent will integrate NLSA with its CentreVu Response Solutions, a suite of offerings that provides customer care applications based on Integrated Voice Response (IVR) technology. CentreVu Response Solutions is based on Lucent's INTUITY CONVERSANT platform.

The integration of the two companies' technologies dramatically simplifies the development of natural language understanding speech telephony applications, making speech systems accessible to a broader market. As a result of the agreement, ①Unisys pioneering NLSA technology now will be available to Lucent IVR developers worldwide, enabling them to build complex speech-based applications for CentreVu Response Solutions more quickly and easily.

Natural language speech systems often replace touch-tone menu systems for applications such as phone banking. The systems select key words and phrases that callers speak in a natural voice, such as "I want to open a new account." This capability simplifies the caller's experience and dramatically expands the potential for new types of self-service applications, providing businesses with substantial cost savings and opportunities for new revenue.

Unisys NLSA simplifies the development and deployment of natural language applications with easy-to-use tools that streamline voice- user **interface** design, testing, grammar creation and word meaning analysis. Average development and testing time is reduced from months to days.

Unisys NLSA is also the only natural language technology that is **speech-recognizer independent**, offering ①Lucent developers a common **interface** for developing spoken language applications without being tied to the speech recognition engine deployed. This allows developers to "snap" speech recognition engines in and out of their programs based on business requirements or technology improvements.

"We want speech application development to be as easy and open as possible," said Denis Aull, director of Response Offers, ①Lucent Technologies. "Integrating the Unisys NLSA and INTUITY CONVERSANT technology delivers the strongest, yet simplest, solution we've seen for developing and deploying speech-based applications. It opens our platform to many speech recognition engines."

### ①Unisys and ①Lucent: Joining to Simplify Speech Application Development

The agreement marks the second integrated offering under an alliance formed by the two companies in November, 1998, when ①Unisys and Lucent Speech Solutions agreed to integrate NLSA with Lucent's state-of-the-art text-to-speech and automatic speech recognizer engines.

This integrated software package, which will be available in the second quarter of 1999, provides a seamless connection between the speech recognition tools and engines, allowing developers to dramatically reduce development time and enable faster deployment of speech-based applications.

"Tools like NLSA that make it faster and easier to develop and deliver speech applications without requiring complex programming skills help bring more natural speech applications to the market," said Joe Yaworski, vice president and general manager, Unisys Natural Language Understanding business initiative. "By working with ①Lucent, we are giving developers around the world who are familiar with the Lucent CONVERSANT environment access to these benefits."

As part of the new agreement, NLSA also will be integrated with ①Lucent's Voice@Work, which enables developers to create custom applications for the INTUITY CONVERSANT platform. Because the Unisys Natural Language Speech Interpreter will be incorporated into CentreVu



Response Solutions, developers can dramatically cut the time to deploy speech applications. The environment will include support for multiple languages, formats for speaking dates, numbers and currencies in any language supported by the speech recognizer engine. A true innovation for developers, the combination of Voice@Work with NLSA opens the platform to a wide range of speech engines in a single development environment.

Unisys NLSA will be available as part of [Lucent's CentreVu Response Solutions](#) in May, 1999.

#### About [Lucent's CentreVu Response Solutions](#)

Lucent's CentreVu Response Solutions, based on the INTUITY CONVERSANT platform, uses advanced voice response technology to collect and provide a wide array of information to callers through voice and fax.

CentreVu Response Solutions can respond to inquiries and handle entire transactions 24 hours a day. With advanced software, INTUITY CONVERSANT can transfer callers to the correct line after callers speak the desired name, and can support natural language speech recognition.

#### About the NL Speech Assistant

The Natural Language Speech Assistant is an advanced speech application development tool set. Unisys NLSA provides application developers not only with the tools for designing and creating speech applications, but also provides for application project management, development methodology and testing.

Unlike all other natural language technology, Unisys NLSA keeps developers' applications from becoming obsolete by providing open tools to design and develop across multiple platforms and speech recognizers. [Unisys](#) has a complete reseller program for NLSA, including platform integration, marketing and sales support, technical support and training. Visit <http://www.marketplace.unisys.com/nlu> for more information.

#### About the Companies

[Lucent Technologies](#), headquartered in Murray Hill, New Jersey, designs, builds and delivers a wide range of public and private networks, communications systems and software, data networking systems, business telephone systems and microelectronic components. Bell Labs is the research and development arm for the company. For more information on [Lucent Technologies](#), visit our Web site at [www.lucent.com](http://www.lucent.com).

[Unisys](#) (NYSE:UIS) is more than 33,000 employees helping customers in 100 countries apply information technology to solve their business problems. [Unisys](#) solutions are based on a broad portfolio of global information services including systems integration, outsourcing, "repeatable" application solutions, consulting, network integration, remote network management, and multivendor maintenance and support, coupled with enterprise-class servers and associated **middleware**, software and storage.

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## **Unisys and Philips Sign Major Reseller and Integration Agreement for Automated Speech Recognition Applications**

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SPEECHTEK, NEW YORK, Oct. 27 /PRNewswire/ -- **Unisys** (NYSE: UIS) and Philips Speech Processing today announced an agreement allowing **Unisys** to resell and integrate Philips automated speech recognizer (ASR) engine with **Unisys** award-winning Natural Language (NL) Understanding technology, opening new markets for both companies. As part of this agreement, **Unisys** will integrate the Philips ASR, SpeechPearl, into its NL Speech Assistant Toolkit. This integration will provide a turnkey industry-leading development environment from a single source to build and operate powerful speech-based applications.

With this agreement Philips will be the inaugural member of the new Unisys ASR Reseller Program (see related release). By pre-integrating and bundling speech recognizers such as Philips SpeechPearl with the Unisys Natural Language technology, the Unisys ASR Reseller program will drive the growth of the speech-based application market to one day replace touch-tone applications with more efficient voice technology.

"Unisys Natural Language tools are licensed by many of the leading IVR vendors offering large-vocabulary speech recognition," said Joe Yaworski, vice president and general manager of the Natural Language Understanding program, **Unisys Corporation**. "Our reseller agreement with Philips will provide our IVR partners with access to industry-leading speech recognition technology, supported by **Unisys** expertise in handling the complexities of integrating hardware, middleware, speech recognition and natural language technologies."

Full Text (920 words)


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SPEECHTEK, NEW YORK, Oct. 27 /PRNewswire/ -- **Unisys** (NYSE: UIS) and Philips Speech Processing today announced an agreement allowing **Unisys** to resell and integrate Philips automated speech recognizer (ASR) engine with **Unisys** award-winning Natural Language (NL) Understanding technology, opening new markets for both companies. As part of this agreement, **Unisys** will integrate the Philips ASR, SpeechPearl, into its NL

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Previously, developers were forced to turn to a variety of vendors for the pieces of technology required to build speech-based applications and then integrate those technologies. Since the  Unisys and Philips technology combination will be sold predominantly through a well-developed distribution network of Interactive Voice Response (IVR) channel partners, developers will receive all the necessary technology components from a single source, with the most complex technology already integrated.

"This agreement reinforces Philips strategy of partnering with leading-edge speech solution providers to become the dominant supplier of natural speech technologies," explained Paul Celen, COO of Philips Speech Processing. "This partnership enables both  Unisys and Philips to develop and drive the latest speech recognition technologies in the telecommunications marketplace."

"Unisys Natural Language tools are licensed by many of the leading IVR vendors offering large-vocabulary speech recognition," said Joe Yaworski, vice president and general manager of the Natural Language Understanding program,  Unisys Corporation. "Our reseller agreement with Philips will provide our IVR partners with access to industry-leading speech recognition technology, supported by  Unisys expertise in handling the complexities of integrating hardware, middleware, speech recognition and natural language technologies."


#### About Unisys NL Speech Assistant

The Unisys Natural Language (NL) Speech Assistant is an advanced speech application development tool set that is platform- and **speech recognizer- independent**. As part of the Unisys Natural Language Understanding suite of products, NL Speech Assistant provides application developers not only with the tools for speech application creation but also for application project management, development methodology, and testing. Through NL Speech Assistant, developers have a standard tool to create spoken language applications across platforms and speech recognizers, protecting their applications from obsolescence.

#### About Philips SpeechPearl

SpeechPearl is recognized as the leading speech recognition engine for both small and large vocabulary applications. Developers now have access to more than 23 languages developed by Philips Speech Processing and the commitment of a true global organization. More importantly, SpeechPearl is one of the only recognizers that can switch languages "on-the-fly". This allows development of robust multi-lingual applications and expands the developer's market potential in the U.S. and internationally.

#### Availability

The combined offering will be available early 1st Quarter 1999.  Unisys has integrated the Philips SpeechPearl recognizer initially into several of its IVR channel partners' products and toolkits. Additional development will be done on an ongoing basis.

The agreement covers all languages currently offered or in development by Philips. It has no restrictions and will include future language development. Core languages offered include: US English, US Spanish, UK English, Spanish, German, French, Dutch and Italian. Additional languages covered by the agreement include: Australian English, Canadian French, Canadian English, Danish, Swedish, Swiss German, Austrian German, Portuguese, Brazilian Portuguese, Greek, Japanese, Mandarin, Cantonese, Norwegian and Thai.




#### About Philips

Philips Speech Processing, an Atlanta-based business unit of Royal Philips Electronics (NYSE: PHG), consists of two lines of business: Speech Technology and Dictation. Philips has more than 40 years experience in the


development and marketing of speech products and is the largest producer of professional dictation systems worldwide. The company also developed the world's first natural continuous speech recognition technology, and is one of the market leaders for products and technology in this fast growing market.

Royal Philips Electronics of the Netherlands is one of the world's largest electronics companies, with sales of more than \$39 billion in 1997. The company is a global leader in the production of television sets, lighting, home telephony products and electric shavers. Its 264,700 employees in more than 60 countries are active in the areas of semiconductors and components, consumer products, professional products and systems, lighting, and software and services. Philips is quoted on the NYSE (PHG), London, Frankfurt, Amsterdam and other stock exchanges. News from Philips Speech Processing is located at - <http://www.speech.philips.com>.

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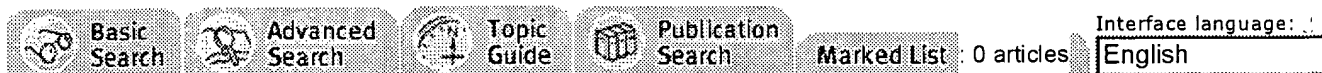
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## UNISYS: Unisys leverages natural language leadership i customer interaction solutions for call centers

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"With more customers demanding service across a variety of channels and expectations continuing to rise, companies face ever-increasing pressure to leverage customer contact technologies to handle the volume and complexity." Companies that utilize natural language applications allow their customers to interact with them in a natural, comfortable manner rather than through a predefined interactive voice response menu maze or a multilayered Web site. Using natural language, customers receive automated responses to questions and information about products and services more quickly and efficiently.

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M2 PRESSWIRE-31 August 1999-UNISYS: Unisys leverages natural language leadership in customer interaction solutions for call centers (C)1994-99 M2 COMMUNICATIONS LTD BLUE BELL, PA -- better support clients' call center implementation needs, Unisys has created a Natural Language Understanding (NLU) Services organization that will focus specifically on consulting and application development for customer interaction. The service group will leverage Unisys leadership position in speech recognition and natural language understanding technology to enable clients to successfully navigate the myriad of business and technical issues associated with applying natural language solutions across a range of customer contact channels, including telephone, email and Web chat.

"Customer care is quickly becoming the critical differentiator in the battle for securing profitable and meaningful relationships with customers," said Tom Steinmetz, Director of Unisys North America Customer Interaction Solutions Center of Excellence.

"With more customers demanding service across a variety of channels and expectations continuing to rise, companies face ever-increasing pressure to leverage customer contact technologies to handle the volume and complexity." Companies that utilize natural language applications allow their customers to interact with them in a natural, comfortable manner rather than through a predefined interactive voice response menu maze or a multilayered Web site. Using natural language, customers receive automated responses to questions and information about products and services more quickly and efficiently.

Companies offering speech and natural language customer services solutions will benefit from efficiencies that can be realized through enhanced technology while maintaining a high level of personal service. In addition, with customers able to access information more conveniently using natural language tools, fewer direct customer interactions will be required in the company's call center. This reduction in call volume results in more time for customer service representatives to deal effectively with more complex -- and possibly more opportunistic -- customer inquiries.

Unisys NLU Services is part of the North American Customer Interaction Solutions practice, which combines the company's expertise in enterprise systems design, legacy systems integration and solutions development. The group offers a full range of services including marketplace assessment, business process planning, proof-of-concept services and speech application development.

Unisys assists clients in selecting solutions that match the business and technological needs specific to each interaction channel. In many cases, this could involve implementing two or three different natural language understanding solutions to cover those industries where clients will make contact over multiple media, such as telephone, Web-chat, and email.

A key component of NLU Services is the Unisys Natural Language Speech Assistant (NLSA) software, a groundbreaking development toolkit that has eliminated much of the time, risk and expense once associated with deploying speech-based applications.

"The award-winning Unisys NLSA Toolkit enables developers to design and create speech applications, as well as manage the application development process, **independent** of the **voice recognition**, **interactive voice recognition** or natural language platform on which it will be deployed," Steinmetz said. "Our leadership in this technology provides us with a deep understanding of how to deploy such solutions quickly and effectively." About Unisys Unisys is 34,000 employees helping customers in 10 countries apply information technology to solve their business problems. Unisys solutions are based on a broad portfolio of global information services including electronic business, systems integration including custom and "repeatable" application solutions, outsourcing, Microsoft Windows NT services, network services, and multivendor maintenance and support, coupled with enterprise-class servers and associated **middleware**, software and storage. Repeatable solutions are focused on key vertical markets including financial services, transportation, telecommunications, government, publishing, and other commercial markets.

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# ATLAS: A generic software platform for speech technology based applications

Håkan Melin

Centre for Speech Technology (CTT), TMH, KTH, Drottning Kristinas väg 31, SE-100 44 Stockholm

## Abstract

*ATLAS is a Java software library that provides a framework for building multi-lingual and multi-modal applications, especially dialogue systems, on top of speech technology components. The design is based on a layered system model, where ATLAS sits as a middleware between an application-dependent layer and the speech technology components and implements much of application-independent functionality in the system. ATLAS is itself layered with interfaces to speech technology components at the bottom and self-contained dialogue components at the top. The layered design is both efficient and flexible and is suitable for a research environment. The framework also provides support for application-dependent layers through a structure of an application with sessions interacting with users through terminals. The terminal concept supports creating audio device-independent applications that run transparently in both telephone and desktop environments. Several speech technology components are available for use with the ATLAS framework, including text-to-speech, speech recognition and speaker verification systems. Four applications that use ATLAS have so far been developed within student and research projects at the Centre for Speech Technology (CTT), including a speech controlled telephone banking system (CTT-bank) and an automated entrance receptionist (PER).*

## 1. Introduction

This paper presents an effort at the Centre for Speech Technology (CTT) at KTH to create a framework for multi-modal and multi-lingual speech technology applications. The framework is called ATLAS and is a Java software library that includes a set of application programming interfaces (APIs) for speech technology components. The aim has been to code much of application invariant, low-level functionality in ATLAS and to provide application programmers with a powerful, easy-to-use speech technology API. ATLAS thereby defines a multi-layered system architecture that encourages software reuse. The framework is intended for building demonstration systems in a research environment.

Human-machine interface design and usability issues are fundamental for the success of speech technology, and a demonstration system can be useful in studies on these topics. A demonstration system can also be useful in collecting speech data to support evaluation of for instance speech recognisers. Usability studies and speech technology evaluation were also the two main goals of the CTT-bank project (Ihse, 2000; Melin et al., 2001), one of the projects where ATLAS has been used.

With the growing commercial interest in speech technology based applications, and an increasing demand on research labs to do industry relevant research, it is also becoming more and more valuable to show practical examples of research advances. This often means live demonstrations of the technology in useful applications. Demonstration systems typically include several speech technology components, such as speech generation, text-to-speech synthesis, speech recognition, speech understanding, speaker recognition, and dialogue management. The components require complex interaction with each other and with audio devices, and the components are themselves complex. As a result, a demonstration system is often a complex system. To prevent system building itself to take too much effort away from the more research oriented tasks, such as improving basic speech technology components, it is important to have an efficient framework for building demonstration systems. A framework can be defined by for instance a suitable programming language, a good system architecture and reusable software components. It is important that such a framework is flexible enough to allow researchers to test new ideas, and that it evolves with state-of-the-art in speech

technology. This requirement is challenging, because it somewhat opposes the requirement for efficiency. A framework that is efficient and easy to use when building small demonstration applications may not be flexible enough when building for example state-of-the-art conversant dialogue systems.

Several publications have reported on efforts in creating frameworks for speech technology applications. A well-known platform is Galaxy-II (Seneff et al., 1998). It was developed at MIT and has been used successfully in several applications such as the Jupiter, Voyager and Orion systems. It has also been designated as the first reference architecture for the DARPA Communicator Program<sup>1</sup> and is now maintained and enhanced by MITRE (Bayer et al., 2001). Galaxy-II is a client-server architecture where all interactions between servers are mediated by a programmable hub and managed by a hub script.

Jaspis<sup>2</sup> (Turunen & Hakulinen, 2000) is an agent based architecture designed with special focus on multi-linguality and user and environment adaptivity. Sutton et al. (1998) describe the OGI CSLU Toolkit<sup>3</sup> that includes several ready to use speech technology components and a Rapid Application Developer tool. Potamianos et al. (1999) review efforts in defining design principles and creating tools for building dialogue systems, including architectural issues.

Several commercial companies offer platforms for developing applications with speech technology. Nuance markets SpeechObjects (Nuance, 2000) as "a set of open, reusable components that encapsulate the best practices of voice interface design". SpeechObjects as a component technology has been standardised within the V-Commerce alliance<sup>4</sup>. It is free source and claimed to be portable between platforms, spoken languages and speech engines. Philips<sup>5</sup> markets SpeechPearl and SpeechMania as speech recognition and speech understanding-centric product families. SpeechPearl includes SpeechBlocks, in concept very similar to Nuance' SpeechObjects.

Related to the creation of generic platforms are also several standardisation activities. The World Wide Web consortium<sup>6</sup> (W3C) specifies markup languages for voice dialogues

(VoiceXML), speech recognition grammars, speech synthesis markup, reusable dialogue components, etc. ECTF<sup>7</sup> defines standards for interoperability in the Computer Telephony (CT) industry.

The ATLAS framework, presented in detail in this paper, has so far been used in four projects at CTT. It was developed within the PER (Pakucs & Melin, to appear) and CTT-bank projects (Ihse, 2000; Melin et al. 2001). Demonstration systems created within these two projects, an automated entrance receptionist and a speech controlled telephone banking system, take advantage of most features in ATLAS. The platform has also been used within the Picasso Impostor Trainer project (Elenius, 2001) and the Hörstöd project (Johansson, to appear), where subsets of its features have been used.

## 2. The system model

ATLAS has been designed with the layered system model shown in Figure 1 in mind. The model has an application-dependent layer on top, a resource layer in the bottom, and an application-independent layer, *the middleware*, in between. The upper side of the middleware is a powerful speech technology application programming interface (API), and the lower side (as seen from above) is a collection of APIs to speech technology components in the resource layer.

The middleware is itself layered. Each layer adds more powerful functionality and abstraction to the set of primitives that are offered in the speech technology API. For retained flexibility, the lower layers are always made available to the application through the API.

ATLAS is first of all an implementation of the middleware illustrated in Figure 1, but it also contains foundation classes for the application layer.

### 2.1. Terminology and notation

When describing software structures in the following sections, we borrow terms from the object-oriented programming paradigm as used with the Java programming language. In this terminology, a *class* is a collection of data and methods that operate on that data. A class is usually created to specify the contents and capabilities of some kind of object. An object created from its class specification is called an *instance*, or simply an *object*. A *method* is the object-oriented term for what is sometimes

<sup>1</sup> <http://fofoca.mitre.org/>

<sup>2</sup> <http://www.cs.uta.fi/hci/SUI/Jaspis/>

<sup>3</sup> <http://cslu.cse.ogi.edu/toolkit>

<sup>4</sup> <http://www.v-commerce.com/>

<sup>5</sup> <http://www.speech.philips.com/>

<sup>6</sup> <http://www.w3.org/voice/>

<sup>7</sup> <http://www.ectf.org/>

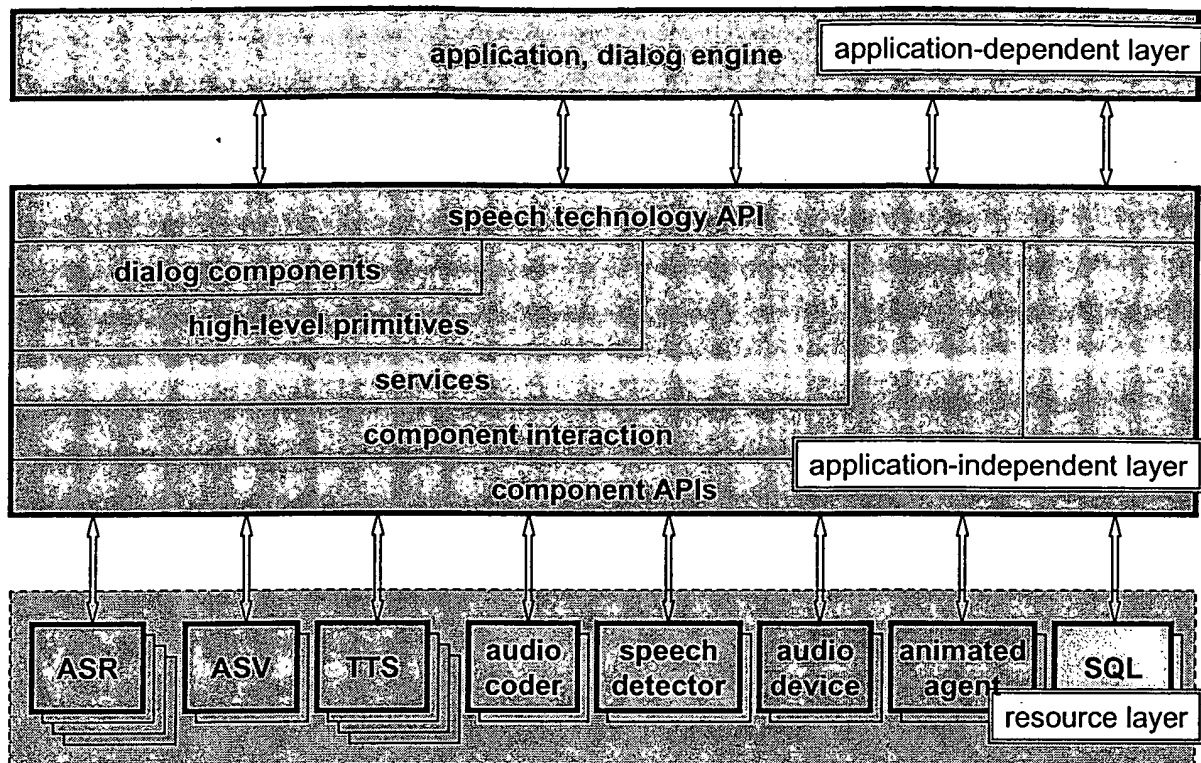


Figure 1. The system model behind the ATLAS design. It is layered with an application-dependent layer on top, a resource layer in the bottom, and an application-independent layer in between. ATLAS is an implementation of the middle layer, and provides some support for implementing the top layer.

called a procedure or a function. For example, a circle may be defined by a radius, a location, and a color. What we would like to do with a circle is perhaps to draw it, move it and calculate its area. With an object-oriented programming language we can then define the class *Circle* with attributes (data) *radius*, *location* and *color*, and methods *draw*, *move* and *getArea*. Once we have the class *Circle* we can create instances of it, i.e. create circle objects. Each circle object has its own radius, location and color, and can be drawn or moved individually.

In this paper the word *interface* is used both in its general sense (for example: a human-machine interface, an application programming interface (API)) and in the object-orientation sense. In the latter case, an interface is a collection of methods and usually represent a certain aspect shared between classes. A class often implements several interfaces. In our example, the *Circle* class would perhaps implement interfaces *Drawable*, containing the method *draw*, and *Movable*, containing the method *move*.

New concepts, especially method names, are set in italics when introduced in the text.

### 3. The middleware

In this section we exemplify the contents of the various layers of the middleware as implemented in ATLAS and illustrated in Figure 1. We start at the top with the dialogue components layer and proceed towards the component APIs.

#### 3.1. Dialogue components

A dialogue component is meant to be a powerful object that can solve a specific task within a dialogue with the user. The task can be to make a secure user login, to get the name of an existing bank account from the user, or to ask for a money amount. To solve such a task, a dialogue component must have some task-specific domain knowledge, such as knowing which customers exist and what accounts they have. The domain knowledge is often supported by an external database. Dialogue components should also be able to detect and recover from errors. An error may be an invalid response from the user such as the name of a non-existing account. If the user gives no response at all, or if he asks for help, the dialogue component should be able to provide useful help. As part of error

recovery, the dialogue component may repeat or re-formulate a previously asked question.

The purpose of the dialogue component layer is to allow a dialogue engine or the application programmer to delegate a well-defined task to an existing component, and allow the re-use of components within and between applications. If no suitable component exists for a given task, the programmer may modify an existing component, create a new one, or choose to solve the problem in some other way. In creating modified or new dialogue components, the programmer has access to all the layers in ATLAS. Dialogue components are in concept very similar to Nuance' SpeechObjects (Nuance, 2000) and Philips' SpeechBlocks. They also seem to be similar to dialogue agents in Jaspis (Turunen & Hakulinen, 2000).

ATLAS itself currently contains only two types of dialogue components: *login procedures* and *enrolment procedures*. The task of a login procedure is to find out who the user claims to be, and then make sure the claim is valid. A login procedure is built from a set of *login operations*, each of which implements a part of the login procedure. The login procedure used in a normal CTT-bank session, for example, contains two login operations. The first is an identification operation that asks the user for his name and ID-number and then looks for a matching customer identity in a database. The second is a verification operation that prompts the user to utter a randomised password and checks the answer for the correct text and for the voice characteristics associated with the claimed identity. The login procedure used in the registration call to CTT-bank, on the other hand, contains a single login operation that performs both the identification and the verification function. This operation asks the user for a unique digit sequence issued to him when he was asked to make the registration call.

While login operations implement the details of login, the login procedure itself adds procedural aspects, such as giving the user a certain number of attempts at a given operation. It also provides a single API to the dialogue engine or the application. An important point here is that it is easy for the application programmer to exchange one login procedure for another: it is just a matter of selecting another object for the task.

The task of an enrolment procedure is to elicit speech from a customer, build a representation of the customer's speech, and store the representation in a database. In a CTT-bank registration call, a login procedure is first used to establish the caller's identity as a valid

customer. An enrolment procedure is then used to collect ten utterances from the customer. The procedure checks that each utterance is spoken correctly and asks for a repetition if needed. When ten valid utterances have been collected, the procedure trains a speaker model for the customer's voice and stores it in a database. The same enrolment procedure is re-used in the PER demonstration system, only modified to exploit a graphical display for showing the user what utterances to speak.

Within the CTT-bank application, another set of dialogue components has been developed. They all derive from the same component called "complex question", and their respective task is to get a money amount, to get the name of a valid account, and to get the answer to a yes/no-question. These components were created inside the application since they were not available in ATLAS, but they are candidates for being moved into ATLAS to make them easily accessible from other ATLAS-based applications.

### 3.2. High-level primitives

The high-level primitives layer currently contains an *ask method* and a *simplified ask method*. Both methods present an optional prompt from a given prompt text and record and process the answer using a set of *audio processors* (defined in the next section). They normally depend on methods in the services-layer for their implementation such as *say* and *listen* (also defined and described in the next section). The simplified ask method returns the top-scoring text hypothesis for the spoken answer, while the ordinary ask method gives access to the results of all participating audio processors including multiple text hypotheses and speaker information.

### 3.3. Services

The services layer provides speech and media input and output capabilities through *play*, *say* and *listen* methods, plus specialised retrieval methods for speech technology components (resources) of pre-defined types.

#### 3.3.1. Speech and media output

The *play* method loads media data from file, sends it to one or more media devices, and makes the media devices render it. The *say* method takes a text argument and sends it to a text-to-speech (TTS) component to generate a media stream. It then sends the generated media stream to one or more media devices like the *play* method. Note that both the *play* and the *say*

methods can handle multi-modal media output devices, such as speech with face animation. In this case the generated media stream contains two channels, an audio channel and a channel with parameter data for face animation.

### 3.3.2. *Speech and media input*

The *listen* method is more complex than the *play* and *say* methods. Its task is to record a segment of audio from a media device and process it. The processing is done by an optional speech detector and zero or more *audio processors*. An audio processor is a speech recogniser, speaker verifier, or any other object that inputs audio and outputs a result. The configuration of speech detector and audio processors to be used by the *listen* method is defined by a *listener profile*, central to the design of the speech input mechanism. The listener profile can specify dependencies between audio processors, such that one processor may wait for the output of another processor and use it as input to its own processing. For example, a speaker verifier A may need the output of a particular speech recogniser B to segment an utterance and another speech recogniser C for deriving an identity claim (in the case when a single utterance is used both for identification and verification of an identity). A's dependency on B and C is then specified in the listener profile as A(B,C). In addition to audio processors given by the listener profile, the recorded audio segment can be saved to a file.

The *listen* method is supported by three other methods: A preparatory method sets up media streams and prepares audio processors for a new utterance according to a listener profile. A call to the preparatory method is followed by a call to the *listen* method itself, that triggers the start of the actual recording (the "listening"). A group of methods can then be used to retrieve results from one or more of the audio processors. When asked for results from multiple audio processors, these methods do some data fusion. Result retrieval methods normally block until results from all audio processors are available. A *maximum processing time* can be specified, however. After this time has elapsed, a method will return with the results available at the time. When all the results have been retrieved, a clean-up method should be called to release resources allocated for the *listen* operation.

### 3.3.3. *Resource retrieval*

Specialised retrieval methods are provided for speech technology components (resources) of each pre-defined type. Pre-defined types are currently *speech recognition engine*, *speaker*

*verification engine*, *speech detector*, *text-to-speech engine*, *sound coder*, *media stream player*, *media stream recorder*, *graphical display*, *SQL database connection*, and *file-oriented database*. Additional and more specialised types of media stream players and recorders have also been defined, including *telephony device*, *desktop audio device*, and *audio-visual agent*. Each resource retrieval method comes in two versions: one to retrieve the default resource of a given type and one to retrieve a named resource.

## 3.4. *Component interaction*

The component interaction layer contains resource handling, media stream connections, and several structures for representing various types of information.

In resource handling, all components attached to ATLAS via a component API are abstracted to a resource, and are collected in a resource bundle. The life of a resource starts when it is created and ends when it is closed. While alive, its operation may be monitored to detect if the functionality is lost (the resource is down). Whenever the application or an object within ATLAS needs access to an attached component, it retrieves a handle to the component's API through the component's resource interface. This layer handles all resource types in the same way, while the services layer provides specialised retrieval methods for each resource type.

A media stream consists of one or more TCP/IP-based media channels. The end-point of a channel is a TCP socket. By convention, the media producer connects to a server socket opened by the media consumer. When the connection has been established, the producer starts transmitting data in a format specified by the consumer. In most cases, the media stream has a single channel containing audio data. The only current example of a multi-channel stream in ATLAS is the stream from a text-to-speech synthesiser to an audio-visual agent, where a second channel contains parameter data for the face animation. Media streams are created on a per-utterance basis.

Several types of information are passed between components, the ATLAS layers, and the application. The component interaction layer provides data structures to hold such information. An example is the *utterance information* structure that holds information about the contents of a spoken utterance. This may be the output of a speech recogniser and may be used as input by the application itself or

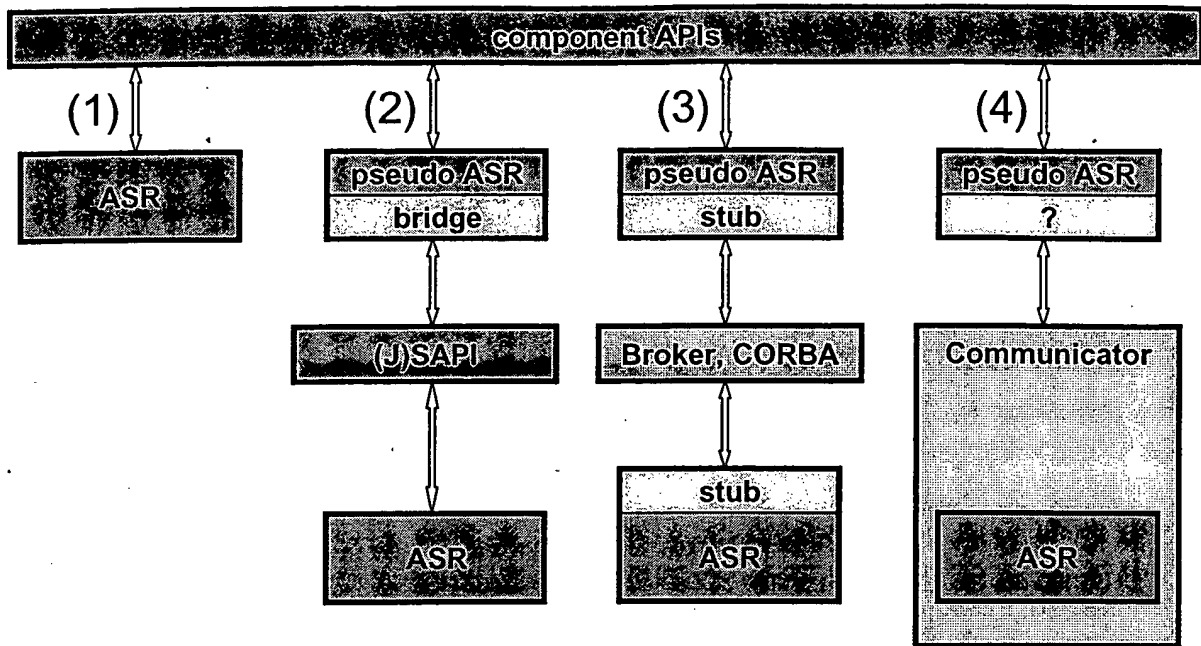


Figure 2. Four examples of how a speech technology component, in this case an automatic speech recognition (ASR) engine, can be connected to an ATLAS component API.

by another audio processor, such as a speaker verifier or a parser. Currently the utterance information structure supports scored text hypotheses, word timing information, and speaker information, but could be extended to support for instance syntactic and semantic information.

### 3.5. Component APIs

A component API has been defined for each of the pre-defined resource types listed in section 3.3. Some of the APIs are complex in that they are represented by several interfaces. The speech recogniser API, for instance, consists of a recogniser *factory*, a recogniser *engine* and a recogniser *utterance*. They are related in such a way that a factory creates engines, and engines process utterances (segments of audio data). Furthermore, the recogniser utterance interface uses the utterance information structures defined in the component interaction layer to represent its recognition results. The recogniser engine interface also extends the audio processor interface described in section 3.3. Similarly, the speaker verification API includes a verifier engine and a verification utterance. These are based on the SVAPI<sup>8</sup> standard speaker verification API. Besides the functionality

covered by SVAPI, the speaker verification API in ATLAS has been extended to handle ATLAS-type media streams, and to have the verifier engine extend the audio processor interface.

The TTS API also contains a factory interface and an engine interface. Utterances are handled with a method call in the TTS engine, rather than with a dedicated utterance object. The synthesis method and language are specified when a TTS engine is created and cannot be changed later. Voice properties for the selected synthesis method, such as pitch level, can be changed, however. An application can change voice or language by creating multiple TTS engines and switch between them.

## 4. The resource layer

As already mentioned, the resource layer refers to a collection of (speech technology) components used by an application. In this chapter we first elaborate on how components can be connected to ATLAS, and then list what components are currently available. Let us emphasise that the components themselves are not part of ATLAS, and that ATLAS is rather useless without a set of good components.

### 4.1. Component implementation

A component API, as the lower side of ATLAS, specifies how an application or an ATLAS layer can interact with a component, while leaving a lot of freedom for how the component is

<sup>8</sup> SVAPI is a result of collaborative efforts of many companies, including Novell, Dialogic, IBM, Motorola and many others.



actually implemented. Since ATLAS is implemented in Java and the component APIs are defined in terms of Java APIs, the component as such must be a Java object. But what if we already have a speech recogniser engine written in, for instance, C++? Then we can create a pseudo-implementation of the engine in Java that uses the existing C++ program to do the actual job. Figure 2 illustrates four examples of how a speech recognition engine (labelled ASR in the figure) can be connected to ATLAS through the component API.

In the first example, the engine already has a Java implementation of the component API. Either the engine is coded in Java or it is coded in a native language (C/C++) but has a Java wrapper using the Java Native Interface, JNI.

In the second example, the engine supports another API than ATLAS' component API. This may be an industry standard API, such as Microsoft's SAPI<sup>9</sup> or Sun's JSAPI<sup>10</sup>, or an engine vendor-specific API (for example Philips<sup>11</sup> API). Provided the ATLAS API can be mapped to the other API, a pseudo-implementation of the ATLAS API could be created that operates as a bridge between the two APIs. Such a bridge can possibly be used with other engines that support the same standard API.

In the previous two examples, the engine is likely to execute in the same process as ATLAS itself, while in the remaining two examples the engine may be implemented as a server in a separate process. The third example illustrates a plain server implementation, where a small pseudo-implementation of the ATLAS API communicates with the server through some inter-process communication mechanism, such as the Common Object Request Broker Architecture<sup>12</sup> (CORBA), Java Remote Method Invocation<sup>13</sup> (RMI), or the CTT Broker<sup>14</sup>.

The fourth and final example in Figure 2 indicates the possibility to interface to an engine that is integrated into another speech technology system, such as the DARPA Communicator<sup>15</sup>. This could include interfacing several other Communicator engines (text-to-speech engine, parser, etc.) at the same time through a single bridging mechanism. Alternatively, each single

engine could be attached directly, like in examples two and three.

## 4.2. Available components

In this section we list the currently available components that implement an ATLAS component API and thus can be used with ATLAS. We pay special attention to how each component is connected to ATLAS and give references for the underlying technology, but otherwise keep descriptions very brief. More detailed descriptions for some of the components can be found in Melin et al. (2001).

Three components are available as internal resources executing in the same virtual machine as ATLAS (Figure 2, example 1): an energy and zero-crossing rate based speech detector, a sound coder and a file-oriented database. (The two latter components are also available as CTT Broker servers, see below.)

Two components use an industry standard API (JDBC that has been chosen to be the component API for SQL databases in ATLAS) to access an SQL database (Figure 2, example 2): one interfaces to a MySQL<sup>16</sup> database and the other to a Borland InterBase<sup>17</sup> database. Note that these ATLAS components add very little to the JDBC driver itself; it merely defines the name of the driver and loads the driver into the virtual machine.

The remaining components are implemented as clients to CTT Broker servers, (Figure 2, example 3), including:

- a text-to-speech component using RULSYS (Carlson et al., 1982) for text-to-phone conversion plus GLOVE (Carlson et al., 1990) or MBROLA (Dutoit et al., 1996) synthesisers. Several Swedish and English voices are currently available, including Lukas (Filipson & Bruce, 1997) and the Infovox<sup>18</sup> voices Ingmar, Annmarie and Roger. It can generate media streams for multi-modal output (face and voice) (Beskow, 1995).
- a StarLite speech recogniser (Ström, 1996). Acoustic triphone models trained on SpeechDat databases (Höge et al., 1997; Elenius, 2000) are available for Swedish and English (Salvi, 1998; Lindberg et al., 2000).
- a speaker verifier based on GIVES. Text-dependent modes for Swedish and English are available (Melin & Lindberg, 1999; Melin, to appear).

<sup>9</sup> <http://www.microsoft.com/speech/>

<sup>10</sup> <http://java.sun.com/products/java-media/speech/>

<sup>11</sup> <http://www.speech.philips.com/telephony>

<sup>12</sup> <http://www.corba.org/>

<sup>13</sup> <http://www.javasoft.com/products/jdk/rmi/>

<sup>14</sup> <http://www.speech.kth.se/broker/>

<sup>15</sup> <http://fofoca.mitre.org/>

<sup>16</sup> <http://www.mysql.com/>

<sup>17</sup> <http://www.borland.com/interbase/>

<sup>18</sup> <http://www.infovox.se/>



- a media device with animated agent output and audio-only input (simplex mode) (Beskow, 1995; Gustafson et al., 1999).
- a media device, “digitiser”, with desktop (simplex) audio output and input based on the Snack toolkit (Sjölander & Beskow, 2000).
- an ISDN media device with telephony call handling and (simplex) audio output and input.
- a sound coder component. Performs audio format conversion, speech parameterisation for the speech recogniser and can fork audio streams. Also available as an internal component.
- a file-oriented database. Also available as an internal component.

In addition to the above CTT Broker-based components, a registry component interfaces a registry in the Broker that keeps track of host-specific servers.

The text-to-speech, speech recognition, agent, digitizer, sound coder and file database Broker servers were originally developed as part of other projects at CTT. They have recently been improved and adapted to work well with ATLAS.

#### 4.3. The CTT Broker

The CTT Broker (Lewin, 1997) is an architecture for inter-process communication that is helpful when building modular and distributed systems. It was initially developed within the ENABL (Bickley & Hunnicut, 2000) and August (Gustafson et al., 1999) projects. The Broker is used by ATLAS to communicate with several speech technology components implemented as Broker servers, as indicated above. It is currently also used in the AdApt dialogue system (Gustafson et al., 2000), where, on the other hand, ATLAS itself is not used.

The primary function of the Broker is to pass message strings between servers through TCP ports. To manage this, it also keeps track of what servers are connected. The basic, lightweight protocol uses a short header for the Broker’s own use attached to the actual message string. The header includes a message type indicator and address information, where message types exist to connect and disconnect a server, to send procedure or function calls to a server, and to send a return or error value in response to a function call. It is up to each server to define syntax and semantics for the actual message strings – the Broker simply passes this string from sender to receiver without

interpreting or altering it. The string based message protocol and the use of TCP port based connections make the operation of the Broker platform independent, in that servers can run in any programming environment and operating system that supports TCP connections. The Broker itself is implemented in Java and can therefore run on any platform that supports Java.

A secondary function of the Broker is to start servers on demand, and to detect when a server is closed. It uses a database of *startable servers* that defines what servers can be started and how they are started.

To aid the creation of servers, software libraries have been created for several programming languages, including Java, C, C++, Tcl, Perl and Prolog. With these libraries a server can register itself with the Broker and make calls to a remote server using constructs in the used programming language, rather than handling low-level TCP connections directly. For example, with the Java library a server creates an instance of the *BrokerClient* class and calls the instance’s *connect* method. It can then make remote calls to another server by calling a method *callFunc*, giving the name of the remote server and the message string as arguments. The *callFunc* method blocks until the Broker sends a reply and then either returns a value or throws an exception.

In addition to the basic call functionality, some of the libraries (currently Java, C++ and Tcl) provide a parser for the contents of a message string that can route calls to *classes*, *instances* and *attributes* inside a server. Language constructs are also available to represent classes and instances in the server. With this mechanism, the concept of remote objects is supported. The remote object concept, the parser, and the corresponding message structure are entirely optional, but are used by all servers currently available through the ATLAS platform.

Using the remote objects concept, an event mechanism has been implemented using a publication metaphor. A server creates a publication for publishing certain information, and servers subscribing to the publication gets an update message every time new information is published. This event mechanism is for instance used by the Broker itself to make server connection status information available. By subscribing to such a publication, an application can for instance know when a server is lost. ATLAS uses this feature with all Broker-server based resources. When a Broker-server based resource is created, ATLAS automatically subscribes to status information for the

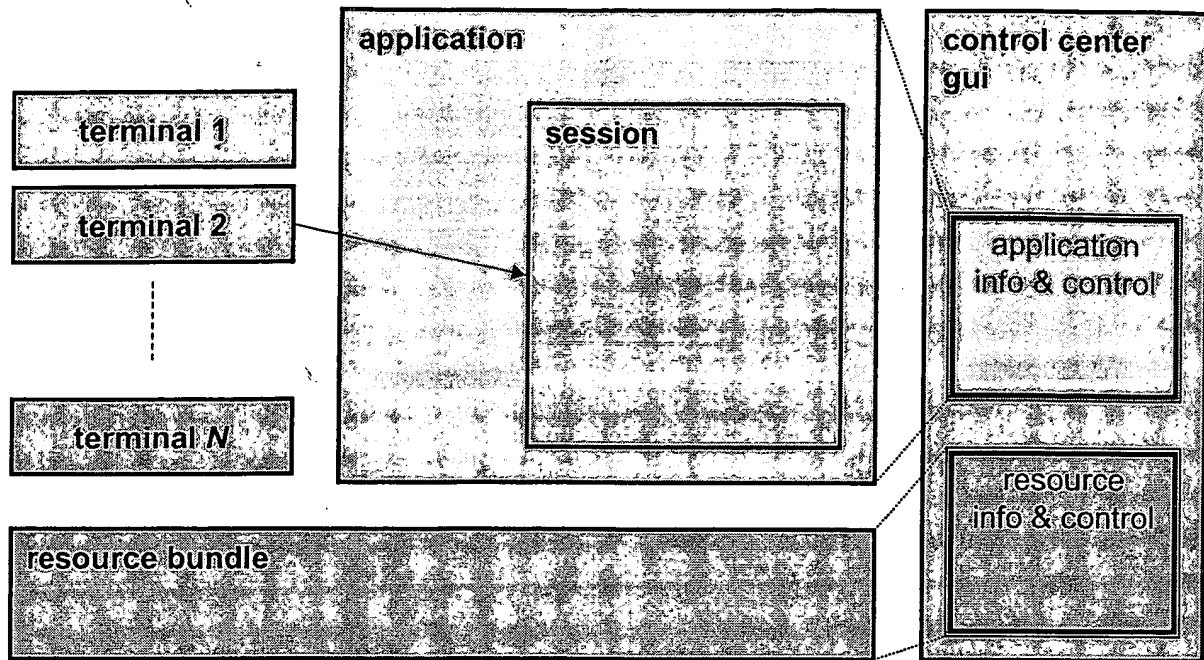


Figure 3. Application structure implemented by ATLAS application support classes. The application object creates sessions upon incoming calls from a terminal. The Control Center GUI is optional and any application can run without it.

corresponding server connection. ATLAS is then notified if the server is lost, and can take measures to for instance re-create the resource. The event mechanism is currently available in the Java and C++ libraries only.

The CTT Broker architecture has similarities with other inter-process communication architectures<sup>19</sup>. The Galaxy-II hub, for instance, also organises servers in a star topology where all server-to-server messages pass through the hub. The hub has a programmable controller function, however, that the CTT Broker has not. CORBA and Java RMI provides support for manipulating remote objects almost as if they were local objects. Similar functionality can be achieved with the Broker and its support libraries. It is left to the Broker server designer, however, to provide client-side APIs that allow remote objects to be manipulated as if they were local objects. Such client-side APIs (stubs) are generated automatically with CORBA and Java RMI.

Audio and other binary streams are usually not sent through the CTT Broker. Instead, servers communicate through the Broker to setup direct connections where binary data is transmitted. This is the same as in Galaxy-II.

## 5. Applications

### 5.1. Application support

Apart from providing an implementation of the middleware illustrated in Figure 1, ATLAS provides a set of support classes for the application-dependent layer of a system. This includes interfaces and super classes for *application*, *session* and *terminal* classes.

The provided super classes can be used to create applications with the structure illustrated in Figure 3. The idea is that the application corresponds to an object that is created once. The application can then create session objects whose lives correspond to physical sessions of interaction with a user through a terminal. It is usually the session object that does something interesting using the speech technology API in ATLAS. The current implementation limits the number of concurrent sessions to one, for reasons of simplicity. We believe this to be sufficient for most research situations.

Each session object is connected to a single terminal. A terminal may be telephony based, in which case the session naturally corresponds to a telephone call, or desktop based. With a desktop-based terminal the session metaphor does not come as naturally as with a telephony-based terminal. It is left to the implementation of the terminal object to decide when a session should start, and to the terminal or the session to

<sup>19</sup> URL references for CORBA, Java RMI and Galaxy-II were given in section 4.1.

decide when a session should be terminated. Common to all terminals is that they provide a means for initiating a session with the application, and that they are associated with an audio output and an audio input device. Optionally, a terminal may also have a means to close a session and may be associated with a display.

One of the key features of ATLAS and the arrangement illustrated in Figure 3 is that applications and sessions can interact with any type of terminal transparently (as long as they do not require particular properties of specific terminals). In CTT-bank, for example, a session normally interacts with the user via a telephony-based terminal, but it can also use a desktop-based terminal. In fact, this was often exploited during the development phase of the project. The desktop terminal could even be extended with output through an audio-visual agent. To take full advantage of multi-modal output, however, the session code needs to be modified to send requests for animated gestures to the agent, to make the agent look more alive. With such modifications the session would still run with a telephony-based terminal, since gesture requests are simply discarded if the terminal cannot visualise them.

Besides sending audio through the audio output device associated with the terminal connected to a given session, the application or the session may choose to add other output devices. This is exploited in PER, where system output is always sent to the audio-visual agent sitting by the gate, even if the current session interacts with a user through telephone. This is to indicate to a newly arrived person at the gate that the system is currently busy talking to somebody else.

ATLAS has been internationalised<sup>20</sup> with respect to the language spoken within the application. That is, assuming the application dependent part of an application is also internationalised, the application can be localised<sup>21</sup> to a new language. Localisation in this case involves translating text elements related to generating system prompts and interpreting user responses, and adding resources for the new language (or making sure the existing ones support the new language). All such text elements within ATLAS, i.e. in its

dialogue components, have been localised to Swedish and English, and both languages are supported among speech technology components listed in section 4.2. Basically, internationalisation means separating text elements from program code. Text elements are stored in text files that are read by the program at runtime. There is one or more text files per language, and text elements are localised by creating a corresponding set of text files for the new language.

An important additional advantage of separating text elements from program code is that changing system prompts, and especially hand tuning prompts for optimal synthesis output, requires no knowledge of the programming language used to code the application. Having all prompt texts collected in one place also provides for a good overview.

A graphical user interface (GUI) to the application and the resource bundle is provided. It is called the Control Center and is entirely optional – any application can run without it. The application part of the GUI provides a possibility to start and stop the application. It also has a message pane that shows when the application was started or stopped, and when sessions are created and ended. The resource bundle part of the GUI provides possibilities to select the current language and to change default resources of each type for each language. The latter facility enables the operator to, for instance, select a TTS engine with another voice to be the default. This effectively changes the voice of the application, given that the application is coded to use the default TTS engine. The resource bundle GUI also has a message pane that logs resource status information.

## 5.2. Examples

In this section we shortly describe four systems that use ATLAS, as examples of how the platform can be used. For each system, we explain its task, what has been coded in its application-dependent layer, which ATLAS layers are used, and what speech technology components are included in the resource layer.

All four systems have in common that their application-dependent layer is coded in Java and that it uses ATLAS application support classes to implement application and session classes.

### 5.2.1. CTT-bank

CTT-bank is a speech controlled telephone banking system (Ihse, 2000; Melin et al., 2001). Customers identify themselves to the system by

<sup>20</sup> Internationalisation is the process of designing an application so that it can be adapted to various languages and regions without engineering changes.

<sup>21</sup> Localisation is the process of adapting software for a specific region or language by adding locale-specific components and translating text.

saying their name and a short digit sequence. The digit sequence is chosen by the customer himself during registration, and is used to make the identification phrase unique. After claiming an identity, he verifies the claim by repeating a four-digit password generated by the system. Once allowed access to the system, the user can check account balance, list recent transactions, and transfer funds between accounts.

The application-dependent layer defines several dialogue components to implement the banking services and part of the registration dialogue. Dialogue components use methods and objects in various ATLAS layers for their implementation. ATLAS dialogue components for enrolment and login are extended and specialised, and used to implement registration and user authentication dialogues. Specialisation includes using an error-correcting code with a seven-digit registration number used to authenticate the user during the registration call, and changing prompt texts to fit the application.

The resource bundle contains a speaker verification engine, several speech recognition engines, several text-to-speech engines, a speech detector, two ISDN terminals, a desktop-based terminal, a sound coder, a file-oriented database and a MySQL database driver. The multitude of speech recognition engines is needed because the used speech recogniser does not support online grammar modification. One engine is therefore created for each specialised grammar used in the application (Melin et al., 2001).

### 5.2.2. *PER*

The PER system (from Prototype Entrance Receptionist) is installed at the central entrance of the Department of Speech, Music and Hearing. The system in its current state is basically a voice-operated lock: employees at the department may open the door by saying their name followed by a random digit sequence displayed on a screen. Speech recognition and speaker verification is used to authenticate the user, and an animated agent gives the user feedback by greeting him or asking him to try again. The physical installation includes a screen, a high-quality microphone, a relay to unlock the door, and several sensor devices to detect the presence of a person. In the future, the system will be extended to engage in dialogue with visitors to provide assistance.

The system was initially developed as part of a student project (Armerén, 1999). It has recently been re-designed to employ the ATLAS platform, and several improvements have been made (Pakucs & Melin, to appear).

Most of the current dialogue is implemented by ATLAS dialogue components for enrolment and login. For future development, a general-purpose dialogue manager, SESAME, will be added on top of ATLAS. The current application has been localised to Swedish and English. It is not a prioritised task, however, to keep system extensions, such as more advanced language understanding and dialogue control, bilingual.

The resource bundle contains one speaker verification engine, two speech recognition engines, and several text-to-speech engines per supported language. It also contains an animated agent, a graphical display, a speech detector, two ISDN terminals, one terminal object per detector, a sound coder, a file-oriented database and a MySQL database driver. Several of the resources are created especially for this application, including the display that presents the random password on the screen, and detectors with drivers to sensor devices.

Regarding the session metaphor used in ATLAS application support classes, each terminal object (except the telephone-based) uses a detector to decide when to trigger the start of a new session in the application. It is then up to the session logic to decide when the session has finished, i.e. when a user has left.

### 5.2.3. *Picasso Impostor Trainer*

The Picasso Impostor Trainer system was developed for a study on speakers' ability to imitate other speakers (Elenius, 2001). A subject calls the system while sitting in front of a computer. He speaks a list of digit sequences to provide a sample of his normal voice, and the system compares the voice to a list of speaker models and selects two target speakers for imitation. The subject can then interactively practice to imitate a target speaker under controlled conditions: by listening to recordings of the target speaker, by watching a display with scores from the speaker verification system for his own practice utterances tested against the target speaker's model, and combinations of the previous two. After each training round, the subject speaks ten utterances without feedback to test if he is able to alter his voice to get "closer" to the target speaker in the sense of the speaker verification system.

The application-dependent layer uses no dialogue components. Instead, the application uses the listen method in the ATLAS services layer to input and process utterances, and the play method to play back pre-recorded samples of target speakers. It has an elaborate GUI for system feedback to the user and for mouse input.

The resource bundle contains a speaker verification engine, a speech recognition engine, a speech detector, a sound coder, a media file database, and an ISDN terminal.

#### 5.2.4. Hörstöd

This system was developed for investigating if a hearing impaired person can be aided by transcriptions produced by a phoneme recogniser in understanding speech during a telephone conversation (Johansson, to appear).

The application-dependent layer is fairly similar in content to the Picasso Impostor Trainer. It uses a telephony terminal for audio input and a GUI for graphical output. It uses ATLAS high-level primitives layer to input and process utterances, and no dialogue components are used. The resource bundle contains the same resources as in Impostor Trainer, except that no speaker verifier or speech detector are included.

## 6. Discussion

The main difficulty in creating a generic application platform is to make it both efficient and flexible. For a given application, the platform should be efficient to use to minimise development costs. But it should at the same time be flexible enough to be efficient for another type of application, and to allow adaptation to new types of applications. We believe that the layered structure employed in ATLAS is powerful in this regard. By providing low-level APIs and structures, where little is assumed about the overall application structure, we allow very diverse applications to share at least the same speech technology components. In the higher, more powerful layers, we assume more and more about application structure. These layers are efficient to use with applications for which these assumptions are valid, and may simply be ignored by applications for which they are not. To develop the platform to provide powerful layers also to new and diverse applications, we can either adapt the existing layer implementations and generalise them, or we can create parallel implementations with other assumptions regarding system structure. As a development process, we suggest to first develop new applications with whatever parts of ATLAS are useful, then to analyse the application-specific code to see what is general and what is specific to the particular application, and finally to successively move the general parts into ATLAS. This is how ATLAS can evolve with research advances.

VoiceXML<sup>22,23</sup> is emerging as a standard markup language for representing human-computer dialogues. To relate ATLAS and VoiceXML to each other, we first try to describe the latter in the context of the system model illustrated in Figure 1. The VoiceXML standard primarily defines a specification for the interface between the application-dependent layer and a voice browser. The application-dependent layer in a VoiceXML application is very "thin" and is represented by a set of XML documents. The voice browser is an application-independent engine that implements dialogues according to given VoiceXML documents. It thus includes the functionality of the middle layer and the resource layer of Figure 1 (though it may have an entirely different structure). We therefore suggest that VoiceXML corresponds to the speech-technology API in ATLAS.

While ATLAS gives the application programmer access to all its internal layers for retained flexibility, VoiceXML provides access to rather high-level functionality in the voice browser, but not to low-level details. For instance, a VoiceXML application can tell the browser to ask a multiple-choice question, but cannot manipulate the voice browser's speech recogniser directly (except possibly through a browser vendor's proprietary features). VoiceXML has been created based on some assumptions about system structure and capabilities, and as a standard it also imposes corresponding constraints on what applications can be created. It is therefore efficient for those kinds of applications. Because VoiceXML is a standard, a VoiceXML application can also be executed in a standard-compliant voice browser from any vendor<sup>24</sup>.

Creating media streams on a per-utterance basis allows demands for real-time performance in some parts of the system to be reduced, compared to if a continuous (unbuffered) media stream on a central bus were used. This is an advantage in a research system since it allows, for instance, an experimental speech recogniser to take the time it needs to prepare for and process an utterance. A slow component need not risk that other components involved in the processing of the same utterance loses any samples. We also believe per-utterance streams make system programming somewhat easier. It has a couple of disadvantages, however. Setting

<sup>22</sup> <http://www.w3.org/voice/>

<sup>23</sup> <http://www.voicexml.org/>

<sup>24</sup> Several vendors market voice browsers that implement VoiceXML, including Tellme, Motorola, Nuance and Pipebeach.

up streams for every new dialogue turn or utterance takes more time than simply telling a device to start listening on an already connected media bus, possibly resulting in a slower system. It may also make it more difficult to use full duplex input/output streams, to implement barge-in, etc. Most standard APIs related to audio and speech also tend to assume a central media bus. Thus we consider using continuous, buffered media streams for the future.

For ATLAS component APIs we have in general not used public standard APIs (the exceptions are JDBC for SQL database connections and SVAPI for the speaker verification). This is because, first of all, for most current component implementations we use in-house technology developed before ATLAS was conceived, and we chose to design APIs that match the abilities of the current technology. Implementing a standard API, such as the Java Speech API (JSAPI), for the TTS for instance, would have resulted in overhead work at this stage. Second, the main candidate for a standard API in ATLAS would be JSAPI, and there are not (yet) many speech engines available that implement JSAPI. Furthermore, JSAPI in its current state does not integrate well with the corresponding Java Sound API and Java Telephony API that would enable us to maintain the audio device independence of ATLAS. Third, as we outlined in section 4.1, an ATLAS component API can be mapped to a standard API via a bridge to enable the use of engines with a standard API.

A corresponding division between internal and standard APIs is seen in Jaspis (Turunen & Hakulinen, 2000). In its input/output architecture, *virtual devices* are abstract units that represent more concrete *engines*. Virtual devices serve as the interface between engines (below) and *agents* and the *communication manager* (above) and partly correspond to ATLAS component APIs. Below the virtual device level in Jaspis are the *client*, *server* and *engine* levels, and standard APIs are employed between the server and engine levels (cf. Figure 2, example 2).

## 7. Conclusions

ATLAS has been presented as a framework for building demonstration applications with speech technology. So far it has proved useful for research in four CTT projects. The CTT-bank system has been used both in a usability study and for collecting data for evaluation of speech recognition and speaker verification performance. The Hörstöd system will likewise be used

in a usability study and to test the performance of a phoneme recogniser. The Picasso Impostor Trainer was used to test how speakers are able to imitate other people's voices. The PER system has been used to test speaker verification performance, and will be a platform for further exploitation of speech technology within CTT and our host department Speech, Music and Hearing (TMH).

The high-level speech technology API and the application support classes in ATLAS make application building easier compared to programming with speech technology components directly. Three of the current ATLAS applications (CTT-bank, Picasso Impostor Trainer and Hörstöd) were created as part of student projects. The platform has thus proved to be useful also for educational purposes.

The future development of the platform will include added support for natural language processing, such as message generation and parsing, and interfacing to other speech recognisers, for example ACE<sup>25</sup> (Seward, 2000) developed at CTT. More technical developments are added logging facilities and support for re-creating lost server-based resources for increased stability.

ATLAS is currently developed and used only within CTT, but we see a possibility to make it publicly available in the future.

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<sup>25</sup> <http://www.speech.kth.se/ace/>

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query by organization**13 Records Were Found**

<u>Employee</u>	<u>Office</u>	<u>Building</u>	<u>Fl.-Ste./Corr.-Rm</u>	<u>Contact No.</u>	<u>Type</u>	<u>Ext</u>
<u>AN MENG AI (MENG) T (SPE)</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/A01</u>	<u>(703)305-9678</u>	<u>T</u>	
<u>ANYA CHARLES E</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/U03</u>	<u>(703)305-3411</u>	<u>T</u>	
<u>BROSS EDWARD (JOSEPH) J</u>	<u>P/2126</u>	<u>PK2</u>	<u>03/C20</u>	<u>(703)305-8754</u>	<u>T</u>	
<u>BULLOCK JR LEWIS A</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/B52</u>	<u>(703)305-0439</u>	<u>T</u>	
<u>CAO DIEM K</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/A06</u>	<u>(703)305-5220</u>	<u>T</u>	
<u>COURTENAY III ST JOHN (JOHN)</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/D42</u>	<u>(703)308-5217</u>	<u>T</u>	
<u>HO THE T</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/S01</u>	<u>(703)306-5540</u>	<u>T</u>	
<u>HOANG PHUONG N</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/A10</u>	<u>(703)605-4239</u>	<u>T</u>	
<u>LAO SUE X</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/A13</u>	<u>(703)305-9657</u>	<u>T</u>	
<u>NGUYEN VAN H</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/D51</u>	<u>(703)306-5971</u>	<u>T</u>	
<u>OPIE GEORGE L</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/A02</u>	<u>(703)308-9120</u>	<u>T</u>	
<u>TRUONG LECHI</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/T01</u>	<u>(703)305-5312</u>	<u>T</u>	
<u>ZHEN LI B</u>	<u>P/2126</u>	<u>PK2</u>	<u>05/U01</u>	<u>(703)305-3406</u>	<u>T</u>	

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